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THE

CALIFORNIA CULTURIST:

A JOURNAL

OF

AGRICULTURE, HORTICULTURE, MECHANISM AND MINING.

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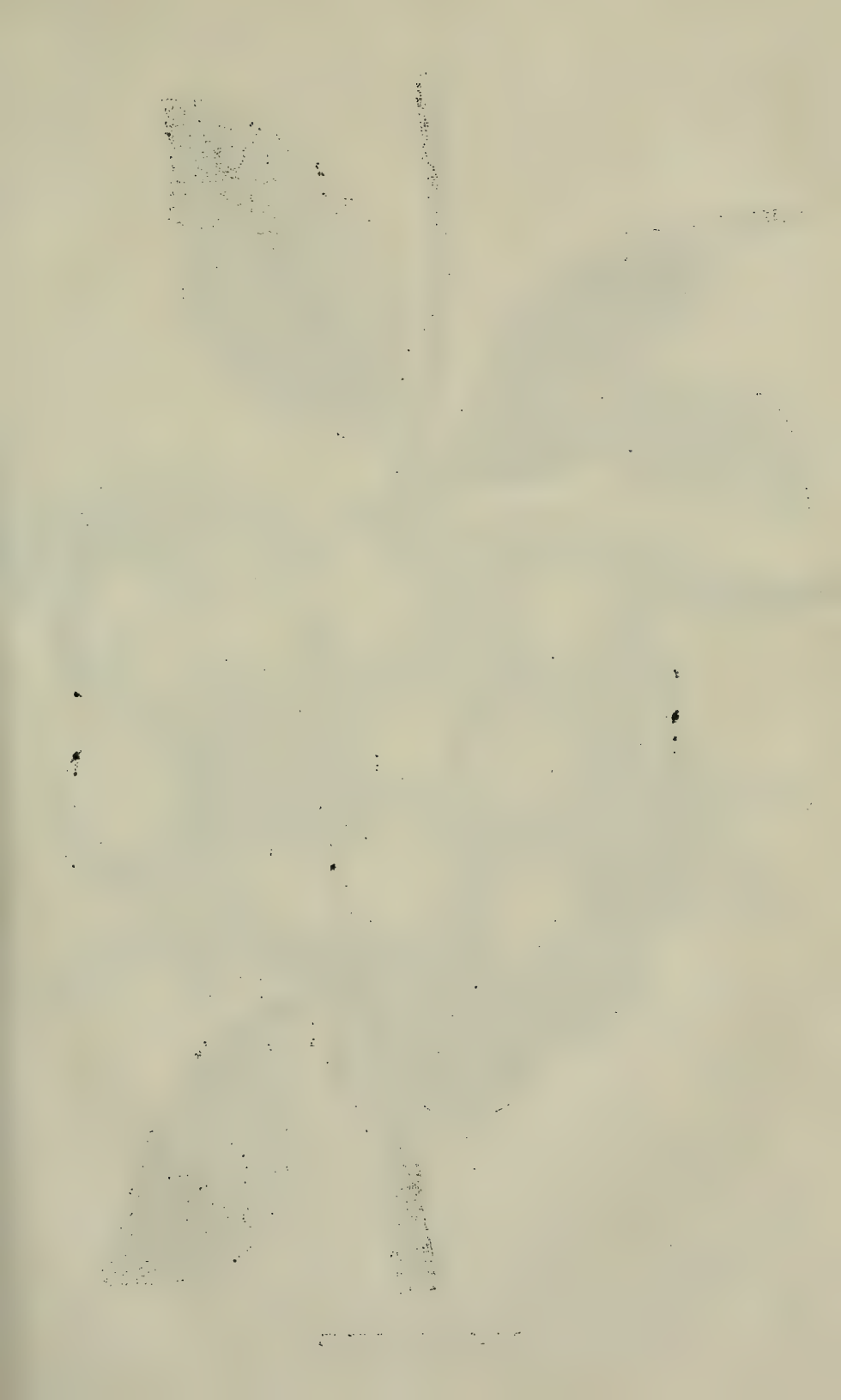
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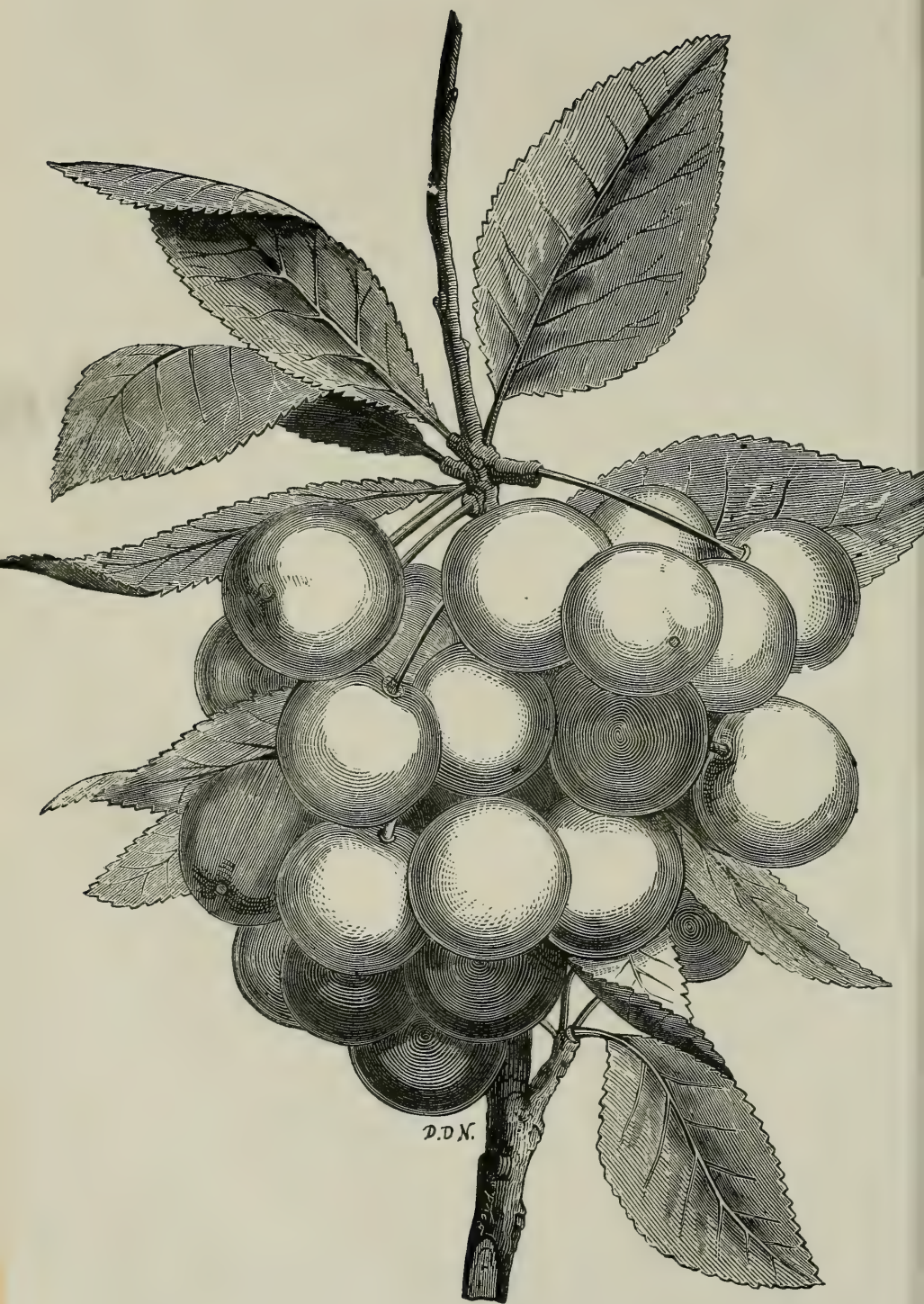
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MAYDUKE.

T H E
CALIFORNIA CULTURIST.

JULY, 1859.

THE FORAGE OF THE PACIFIC.

NO one can deny that, however humbling it may be to our State's pride in regard to agricultural resources, the question as to how her future herds of cattle and horses are to be supported, is becoming one of grave import. The past winter and spring will be long remembered, by many herdsmen, as the year of abundant rains, and yet an extreme scarcity of early green forage for their stock. We can point to a single cause for this, in the coldness of the season; but are we not liable to be visited, from year to year, with the same climatic influences that have, during the past winter in very many localities, nearly decimated our stock? It is well known that very many of our valleys' herdsmen are looking out and securing every mountain meadow, along the coast range and among the ridges of the Sierra Nevada, as summer and autumn feeding grounds for their stocks of cattle, and that those meadows are everywhere becoming of great intrinsic value.

It is equally well known, too, that those valley stock-growers have been in the practice, annually in early spring, of driving their stock from the low grounds to the more hilly and early pastures of the foot-hills. That, this year, the occupants of the hilly country have remonstrated against this, in tones loud and deep, as depriving them, to a great extent, or greatly lessening the amount of forage absolutely required for their own rapidly increasing herds.

The fact is, California, with her present system of stock husbandry, is rapidly approaching a crisis which but few even anticipated, but which must be met and provided for. It cannot be said we have too much stock for our population, so long as beef sells at twenty-five cents a pound. Equally strange to many would appear the assertion that what stock we have we are unable to keep from dying by starvation. One or the other condition, however, must be the true one; either we have too much

stock, or, with our present system of feeding, not a sufficiency of forage for what we have.

It is an undeniable fact that there are millions of acres of fertile lands ; fertile in the production of useless weeds and other herbage ; that, in any other temperate climate than California, or where they feel the revivifying influence of summer rains, would be clothed with luxuriant and nutritious grasses, that are here but barren grounds within the meaning of the stock-grower's vocabulary.

No country in the world, in its vegetation, is more beautiful in spring and early summer time, than California ; and yet but few are more parched, dry and cheerless, than are her unwatered plains and hills, during the later summer and autumn months. We have all the light and heat of a tropical summer without its rains, and this has given us indigenous grasses as peculiar as is the climate ; grasses for the greater part annuals ; and such as are not, have their season of rest or cessation of growth during the summer and autumn months, rather than the winter. The necessity existing of feeding closely these annual grasses before they can perfect their seeds, is rapidly causing their disappearance over immense cattle ranges ; and, as no substitute can be provided whilst the present system of grazing is continued, it becomes a matter of serious inquiry as to where are we to look for that great increase of cattle over the present, so imperatively required by a rapidly increasing population.

It may be said that the numbers of animals will increase in a corresponding ratio with the increase of the farmers. But where are they to be fed ? If there is not sufficient forage for the present stock, how can a larger be sustained ? Our increasing population need them and must have them.

It is evident, we think, that an entirely new and different system, as relates to stock feeding upon our grazing lands, must be adopted. Our hills and mountains that were, but a few years ago, annually clothed with a rich, heavy burden of the nutritious wild oats, are rapidly becoming almost barren of the product by being so continually depastured as to wholly prevent their necessary seeding. Where the wild oat is reserved for hay, and the product cut just as the seed is in the milk or approaching it, such is the recuperative power of this plant that, from the stool or stubble, there will grow a second crop that, though not as heavy as the first, sufficiently matures its seed to furnish the most abundant seeding for a succeeding crop the following year. But, if this second growth is fed off by stock, preventing its seeding as is usually done, the land produces, in a short time, but little else than turpentine weed or other useless product.

A resort to some of the cultivated grasses would seem, therefore, to be the only alternative presented to the California stock-grower. The open grounds, with their annuals all gone to rest, having ceased their growth in July, present but a poor prospect till the next winter rains shall again bring them into life. What then are to be the substitutes for these rapidly disappearing annuals ? But few countries can boast of better natural pasture grasses than those that were indigenous to their soil. But of cultivated grasses to be often renewed in the routine of farm crops, a large variety

have proved of immense value to the agriculture of many countries that did not originally possess them.

California will prove no exception to the rule. We must introduce and put to test the various grasses that have proven of value in other countries; we must carefully watch their development and their adaptability to the peculiarities and vicissitudes of our various climates, soils, elevations and exposures. We must try sowing and cultivating corn broadcast, the Chinese sugar cane and, to some extent, root crops, as feed for stock. We must fence our lands and cultivate them more judiciously and with greater care. A vast number of experiments, and many of them unsuccessful, will needs be tried before results entirely satisfactory will be obtained; let those who can afford it try them and publish the results; and let those who cannot afford to experiment, subscribe for the *Culturist* and thereby secure the benefit resulting from the experience of others.

GRAPE CULTURE.

Editor Culturist:—I wish to ascertain the profits of an acre of grapes, with good cultivation, for making wine; that is, what is the best distance for planting vines that are not to be trained on an arbor; how many pounds of grapes for a gallon of wine, and how many pounds of fruit will an ordinary vine produce, six years old? What is the best soil for a vineyard in this country? What is the best method of training vines in a large vineyard, and what are considered the most valuable varieties for home purposes, also for marketing? Feeling a great interest in the cultivation of the grape, and wishing to obtain as much knowledge from the experience of others as possible, I make these inquiries, not only for the benefit of myself, but for all those who may feel interested in that branch of horticulture. Answers to the above questions, or any other information concerning grape culture, will be thankfully received by

INQUIRER.

We hope the foregoing inquiry will elicit others' views than our own, and from those who have had the longest experience in our Pacific coast climate. It is impossible, however, even for the best informed, to give anything like reliable data as a basis for calculating the profits of a vineyard, that can be of general application. There are a great variety of cases that affect the profit or loss; for not only does aspect or exposure, and the quality of the soil affect materially the quantity of wine produced, but quite as much the quality; and the quality, the price or profit per acre.

The variety of grape the best adapted to our locality, is comparatively valueless in another; at least, this applies to European varieties with a European culture. Nothing but experiment can demonstrate the superiority of one variety over another for producing the finest wines in our peculiar climate; and even when the vintage season arrives, the quality and consequent value of the wine depends much upon the skill of the vigneron.

It has been our fortune to be the manufacturer of barrels of wine from fruit

of our own, grown in southern Michigan; this experience, however, will go but a little way, as applicable to wine-making in California, where probably a large number of the best European wine grapes will succeed admirably; whereas, at the East, after repeated trials, the native Catawba proved superior to any foreign variety. But the experience of twenty years' culture of the vine, principally for table and market use, has not been, we hope, wholly without its benefits to us, when speaking of the adaptation of soils, mode of culture, distance of planting, etc.

In regard to the distance at which vines should be planted for field culture, we are aware a great diversity of opinion exists, and it is hardly to be presumed that the same distance would, in all situations and soils, be deemed best. We believe much depends upon the nature of the soil, and its power to produce a lesser or larger vegetable growth. We would not plant as closely upon the ever moist and rich alluviums of our rivers, as upon the drier and less fertile hills and plains. Not that the hills are less fertile in all the elements constituting a superior soil for the grape; but that they do not as generally produce as exuberant a growth as do the alluviums abounding in moisture and decaying vegetable substances.

Upon river alluviums, vines will do very well at five feet apart; but some would recommend six, or six by eight, even. And here, again, much depends upon the variety, as some are found to produce more wood than others upon the same soil. Without specifying any particular variety, we should plant in our extremely hot and dry climate, upon all lands not actually of the strongest character of alluvium, five by six feet apart and no more. We would much prefer even closer planting and low training, to giving more space with higher training. In our climate we can hardly keep the ground too much shaded or produce too much foliage for ripening the fruit; whilst in most wine countries, subject to summer rains, the great desideratum is to secure as dry an atmosphere around the growing fruit and foliage as possible; to effect this, high training is preferable to low.

There can hardly be too dry an atmosphere for the vine or its fruit, and yet the fruit should, as far as possible, be shaded whilst growing. It is a mistake to suppose that grapes will mature earlier or be improved in quality by cutting away the leaves and exposing the fruit to the direct rays of the sun; it is always injurious. This being an established principle with the best practical culturists, that mode of training which will best secure the greatest amount of shade to the fruit of the open, field grown vine, is the one to be adopted, particularly under our almost tropical sun.

In a former number of the *Culturist*, we stated our belief that the best distance for vineyard culture, was rows six feet apart, and the vines five feet apart in the row. Very many, doubtless will differ with us and plant their vines much closer, in accordance with European practice; but even the foreign grapes, when grown in our soil and climate, produce in a given time more than double the amount of vine and foliage, and as the close pruning systems of the old countries are not the best adapted to ours, neither are the distances at which they plant, to be an unvarying rule for us.

We therefore adhere to our previously expressed opinion that the best distance is rows six feet apart, and vines five feet apart in the rows, for all the stronger growing

kinds in a fertile soil; and the vines, each supported by a stake not to exceed six feet in height, firmly set in the ground.

There is one mode of training and supporting the vine, in field culture, which we would strongly urge upon the attention of the grape-grower, as it secures more than a double object when adopted. If the plan is not entirely original with us, we hope some of our readers will refer us to some author who has already described it. We have trained vines upon the plan, and can attest to its superiority over any other mode—in our judgment—for field culture of the grape in a California climate; but when we speak of a California climate we do not mean that truly local climate peculiar to the city of San Francisco and vicinity, or any other locality directly exposed to the raw ocean winds.

Our plan is this: Let the distances between the rows be alternately five feet and six feet, and the vines five feet apart in the rows, and directly opposite each other, thus: :: :: :: When the vines have attained their second year's growth, instead of stakes set in the ground for their support—which, unless very large, will decay at the surface of the ground and become useless in a few years—we would use stakes set only upon the surface of the ground with their top ends brought together and fastened from every four hills or vines standing nearest together. The appearance of such a vineyard would be rows of pyramids with four vines to each, five feet apart, and the pyramidal rows six feet apart. The stakes should be slightly notched at the top, and a turn or two of wire passed around them. Six feet is length enough for the stakes; but, owing to their inclination from the perpendicular, the apex of the pyramid will be hardly five feet. In this way, an equal length of vine is obtained with a foot less of elevation, and saving the entire portion of the stake that would otherwise necessarily be set in the ground. On the vines being trained to or around the stakes from bottom to top, no wind can displace them or blow them down; and whilst the foliage is sufficiently exposed to the sun's rays, the fruit, from hanging to some extent beneath the vines and stakes, is better shaded than on a perfectly upright vine.

By this mode we adopt a medium between upright and horizontal training; that portion of the ground, five feet square, covered by the inclined stakes, vines and their foliage, is more completely shaded, losing less moisture by evaporation than though the vines were all upright. They are more easily trained and the fruit gathered, because, with the same length of bearing vine, they are not as high to reach to the top by more than a foot. The soil can all be cultivated by animal power, except that portion immediately beneath the vines.

We have introduced this mode to notice from having practiced it, thoroughly testing its efficiency. The supports can be made of either round or sawed timber, from two to three inches in diameter or square.

The best soil for a vineyard, where the quality of the wine is the object sought, is doubtless a rich, gravelly, calcareous soil, with just enough of moisture to ensure its continued thrift during the fruiting season. That the broad alluviums of our rivers are admirably adapted to the production of immense annual grape crops, experiment

has already demonstrated, and that a very fair quality of wine can be made from their product is equally certain; but no one will contend that a wine of superior excellence will ever characterize the products of such soils, however well they may be adapted to growing grapes for the table or dessert, unless a California experience should prove all former ones to be at fault as applicable here.

That we may expect better wines here from soils of similar character than can be produced in the humid climates of the Atlantic States and Europe is reasonable, because our long, hot and dry summers are peculiarly favorable to such a result. No fears, then, need be entertained as to the adaptation of our strongest valley lands to the successful and profitable culture of vineyards. Allen, in his treatise on the vine, says:

"The grape vine, in Italy, and in Spain, and the islands of the Mediterranean, as also in its native position, is found to be a plant attaining great age and size; notwithstanding this, the cultivators of France have so changed its characteristics, that, in some districts there, by their skill, you may find it brought almost to the condition of an annual; two or three years being the usual time at which they are renewed by layering, and being so close, that it is with difficulty you can pass among them.

"With regard to soil, they present as striking a contrast; they are successfully cultivated in vineyards, where there appears scarcely soil sufficient to retain moisture enough to keep life in the plant; vineyards, enjoying equally good reputations, are situated where the soil is a rich loam.

"Climate and exposition, as well as soil and manure, have a great bearing on this cultivation. That the cultivation of the grape, in these United States, is to be vastly increased, there can be no question. How far European theories and modes of cultivation may be suitable here, is yet to be proved. That the grape is susceptible of an almost endless diversity of the modes of cultivation, has been fully established."

In regard to the profits of land, devoted to vineyard culture, no accurate data can be given, so much depends—as we have already remarked—upon distance in planting, adaptation of soil and variety of grape or wine to be produced. The Mission grape, of California, planted at the distances we have suggested, rows alternately five and six feet apart, and five feet apart in the rows, at six years old will yield an average of six thousand, five hundred pounds to the acre, which, at ten pounds of grapes to the gallon of juice, will give a yield of six hundred and fifty gallons to the acre. The profits per acre must depend much upon the price of labor, cost of cultivation, and quality of wine produced. The labor of cultivating an acre of vineyard is about double that required for an acre of corn. Some varieties of grapes, with thicker skins and more pulp, require twelve pounds of fruit to produce a gallon of juice. It is never safe to calculate the product, per acre, of a vineyard, basing your estimates upon the yield of a single productive vine; for, in the best managed vineyards, there will always be a large number of vines that do not produce an average yield, or, if so, only upon alternate years. A perfectly safe estimate as an annual yield per acre is five hundred gallons; which, in favorable years, may be increased to eight hundred

and even a thousand gallons; from which an estimate of the probable profits can be made with tolerable accuracy.

It is impossible to say what varieties of the grape will eventually prove the most profitable for vineyard culture and wine making in California. Were we to judge from the experience of our Atlantic neighbors, we should say the Catawba; because not a single foreign variety has answered the expectations of American culturists. But here it is quite different; hardly a single known foreign variety has been introduced, that has not found a perfectly congenial home in both our soil and climate.

Among foreign varieties, the Black Hamburg and the Scuppernong, are superior both for wine and the dessert; the common California or Mission grape, however, makes a very good wine, and the facility with which this variety can be procured in quantity for vineyard culture at comparatively trifling cost, will maintain for it, with many culturists, a preference over other foreign kinds; for the California grape—so called—is but a tolerably well acclimated foreign variety, there being others superior to it, in many respects, as size, flavor and productiveness, and even more hardy as regards climatic influences.

As furnishing additional valuable information on the subject of the vine and its product, its culture, the chemical composition of the grape, the making and management of wines, etc., we shall give a series of articles, one in each number, deriving our information from the best authorities we can procure.

GRAPES AND WINE, No. 1.

GRAPES, used as food, are extremely nutritive and very wholesome; for the dessert they should be of a fine flavor, thin skinned, juicy and, to most tastes, sweet, and always ripe. Unripe grapes, though making a very good wine, are not wholesome if eaten. Raisins are grapes that have been allowed to shrivel and partly dry on the vine; they are then cut off and further dried, either in the sun or in ovens. In drying they lose about two-thirds their weight. The best raisins come from Spain, the produce of the provinces of Valentia and Grenada. Common raisins are made from various kinds of grapes; but all inferior to those made from the true Malaga raisin grape.

Zante currants, so much in use for cakes and puddings, are a kind of little raisins or grapes devoid of seeds. They were formerly almost entirely grown in the Ionian Islands. The chief place from whence they were imported was Corinth; hence, *corinth*s, converted into *currants*. They are now principally brought from the island of Zante; hence the name of Zante currants.

Although grapes are everywhere a superior dessert fruit, yet it is for the production of wine that the greater proportion of the produce of the world's vineyards is devoted. To make good wine from grapes alone, it is essential that they abound in saccharine matter, no other quality can compensate for a deficiency of this, and to produce this quality in the grape to the highest degree, a large amount of solar influ-

ence—light and heat—is required. In California, we have this combined with a dryness of atmosphere, all contributing to the fullest perfection of the grape and its wine.

Upon the Eastern continent, the production of good wine is limited to a zone between the thirty-third and fifty-first degrees of north latitude. Coblenz, on the Rhine, is the most northerly point; and Shiraz, in Persia, and the Isle of Cyprus, the most southern. In the most northern parts of this zone, the grapes are deficient in sugar, and the wines are often harsh and austere, like those of the Rhine; and in the southern part, the grapes have a superabundance of sugar, and are deficient in other necessary principles; hence, only sweet wines can be made there, such as those of Malaga; it is in this part of the grape zone that the most and best raisins are made.

But it appears that the ripening of fruits, particularly of the grape, does not depend altogether upon latitude; for a portion of the banks of the Rhine, where excellent wine is made, has the same latitude as the south of England, where it has been found very difficult to ripen the grapes sufficiently in the open air, on account of the great humidity and cloudiness of the atmosphere, which lessen the action of the sun's rays. Grapes ripen best and are sweeter where the foliage receives the most sun; hence, in most localities, a southern exposure is deemed preferable to a northern; but it is a question yet to be solved, as to how far this rule will apply to a California summer of six months almost uninterrupted sunshine; and whether a northern exposure or slope of a hill, will not be found preferable to the southern, as being less likely to promote too early a growth in the spring, rendering the vines less subject to the action of late spring frosts.

The season, as well as exposure, often makes a material difference in the quality of grapes. In dry seasons, the juice is less in quantity, but contains more sugar; in very wet seasons, the juice will be plentiful, but contain much water and mucilage, with little sugar; hence, the difference in the quality of the wine from the same vineyard on different years. Grapes, when quite green, are austere or styptic; next they are acid, and finally sweeter as they grow ripe. The vine, in a proper climate will thrive in almost any soil not too wet, but flourishes best in one that is rich, dry and light; and, though thriving best in rich soils, the grapes are not as good for wine as those grown on poorer land. It is often the case that the grapes fittest for the dessert are the poorest for wine.

It is generally admitted that the best soils are those of a light, calcareous or loamy nature; but even sandy, gravelly, and stony land are found to answer well. Volcanic soils seem well adapted to vineyards; thus some of the best wines of Italy are from the neighborhood of Vesuvius, and the famous Tokay is also the product of a volcanic district. The vine also grows well in the debris of granitic rocks, as is the case with that which produces the celebrated Hermitage. Many believe that the chemical composition of the soil is of less importance than its physical character.

The manner of training the vine varies in different countries as well as in the same country. Thus, in Italy, they are for the greater part suffered to run to a great height upon the tree and trellis, spreading with the utmost luxuriance and hanging in fes-

tons from tree to tree, the effect of which is described, by travelers, as highly beautiful and picturesque. But, throughout the greater part of Europe, the vines are trained on low props. The French and Germans prefer the low training, cutting the vines back to a few feet in length and, though the fruit is diminished in quantity, its quality is believed to be improved by its obtaining more of the sun's heat through reflection from the ground. In some of the sandy parts of Spain, the vines are allowed to trail upon the ground. The different modes of planting, propping, pruning and renewing the vines have an undoubted influence on the growth and quality of the wine.

The same climate, soil and mode of culture often produce wines of very different qualities. Aspect alone makes a very great difference; thus the same vineyard with the same variety of grape, but with both a northern and southern exposure will produce wines of very different characters; as also will the same hill at the summit, middle and bottom. The principal varieties of the grape, chiefly cultivated for wines in European countries, are the red and white Chasselas, or Muscadine; the Auvergnat; the Frontignac, or Muscat, white, red and black; the Damask; the Sweet Water; the Raisin grape; the Malmsey; the Malmsey Muscadine and Black Hamburg, with many other varieties impossible here to enumerate. But wine-makers seldom confine themselves to one kind of grape, several being usually mixed together in the vintage; but in some very choice wines only one sort is used.

The varieties of wines are almost infinite; every kingdom, every district and sometimes a single vineyard, producing wines of very distinctive properties, and from which they frequently derive their name. Thus the wines of Portugal, of France, and the Rhine each have their peculiar character; and the Tokay, Hock and Constantia wines are each the products of particular vineyards, their qualities depending on the varieties of the grape, as well as on several local circumstances, and the modes of manufacture. Some have maintained that the vine ought not to be manured, when the production of wine is the object, from an idea that the manure affects the flavor of the wine; this opinion is held by many French wine-growers; and, in the Portyielding district of the Alto Douro, in Portugal, the use of manure is prohibited by law. But it is not clear that the practice of manuring is injurious; for, in Germany, it is employed very freely; this is likewise the case with the vineyards near Bordeaux, where the clarets are made. Liebig recommends the prunings of the vines themselves as the best manure. It is certain that the flavor of wine is affected by circumstances apparently inappreciable; scarcely two vintages afford exactly the same quality of wine, the vintage of some particular year, as that of 1811, the comet year, sometimes excelling all others.

In our next we shall speak of the chemical constituents of the grape, and the reasons of its admirable adaptation to the production of wine.



SOILING.—A farmer in our office said he had known an acre of corn, sowed for soiling, to be sold for \$50 on the ground. It is a great assistance to stock, particularly milch cows, when the pastures are "burned up" in September. Try it.

GARDEN ÆSTHETICS.

THE above is the heading of an excellent article by a correspondent of the *Tuolumne Courier*. Now we do not like to see words used that "poor folks cannot understand;" because they are sure to be of more or less trouble to *us*; but "Æsthetics," according to Webster, is "the theory or philosophy of taste; the science of the beautiful." It is, therefore, well chosen and so exceedingly appropriate, as applied to the subject treated of, that we really like it, and together with the article itself, present it to our readers.

Mr. Editor: I am glad to see that you reserve a portion of your excellent paper to subjects connected with the HOME AND HOMESTEAD; which, although hitherto considerably neglected in the universal scramble after *oro*, as we have all seen, is now resuming its own position among other branches of industry—"coming home to the business and bosoms" with an increased interest to every one who breathes the atmosphere of this golden land—maugre the gold, forsooth!

Hoping to see some communications on this subject, in compliance with your kind invitation to that effect, from the many able pens with which we are surrounded, I did not dare to come before your editorial eye in the character of a contributor until at last, in lieu of anything better from a better source, I venture to lay these rather undigested scribblings at your feet—haply if they be without power for good, they may, like a certain worthy doctor's pills, at least accomplish little harm. So much by way of preface.

The new science called ÆSTHETICS, or the love of the beautiful in nature and art, seems to be gaining rapidly, even in this far-off land of the West; and if we could still further have it so understood as to combine the love of the useful, but few subjects would present a more fascinating programme. We hope this can be done. And to begin, let us address ourselves to the fairer and more impressible portion of our race, believing, that as the dear creatures were only made a little lower than the angels, there is still enough of the reliques of that heavenly descent within them to form a lever to mold us rougher kinds of humans, howsoever they, in their pure minds, see fit. For to them, if we are not mistaken, everything that relates to "Home and Homestead," whether it be a cabin or cottage, a residence or a door-yard, a garden or a parterre, in a peculiar degree present themselves.

With those fair beings in our company, in hopes of finding some profitable as well as beautiful employment for our hands and our heads, let us, in the words of an ancient book, "go down into the garden to see the fruits of the valley, and see whether the vines flourish and the pomegranates are budded; for lo! the winter is past, the rain is over and gone, the flowers appear on the earth, the time of the singing of the birds is come." And what a goodly prospect is spread out before us! There are "herbs and fruits and flowers" in abundance, and walks and borders and plots of various sizes for convenience, and green sward and figured parterres, and plants from many climates and in all the hues of the rainbow for ornament. Much labor and taste, and adaptation of means to purposes have been expended here; and

the result, as a whole, consummate pleasure, with fewer drops of any other quality than could have been accomplished in most other undertakings, by the same amount of effort. How many lessons of contentment, and purity, and cheerfulness might there not be inculcated in the garden? "Verily, it is good for us to be here"—and eminently so for woman to be here, even if she were alone; for, as she is the "glory of the man," and the beau ideal—or rather the belle ideal—of all beautiful things, how fitting and how suggestive, that she should occupy much of her time in the garden.

It is a remark, if we remember right, of Mrs. Loudon, or Mrs. Lincoln, or some other notable botanic lady, that when the first human pair was formed, they were brought into a garden—almost giving us to infer that their beneficent Creator had no higher gift to bestow upon them, as a *bridal present*, than this; as health, enjoyment, competence were comprehended—enjoining them to dress it and keep it, and eat the fruit thereof. It was a gift and a work appropriate; for there are many things in the garden which the ladies, even in the last half of this refined nineteenth century, might becomingly perform, without a particle of damage to their constitutions or delicacy of feeling.

It was a gift and a work for them both, and they had the ability to perform it. No foreign laborer was introduced to do the heavy drudgery, and allow either the man or the woman to indulge in aristocratic luxury, looking supinely on or superintending with fastidiousness the weary progress of operations. In that case, the Paddy would have been the real owner of the garden—and rightly, too. It is the same to-day as it was then: the only one that can be said to own a garden, is he by whose hands the labor is actually done in it. Every vegetable, and tree, and flower owes to him its life, its usefulness, its beauty; and doubtless it is to him alone are they grateful, for all the kindness and the skill he has treated them with; and if they were endowed with the faculty of speech, they would proclaim it aloud, every day the sun gave light.

He knows every plant individually, its history and its qualities, as a mother knows the members of her own family. He remembers when he planted a seed here, and set out a cutting there; how he watered it and tended it, in sickness and in health, from the time he first observed its seed leaves, until now when it showers on him a load of rich golden-checked pippins. This here, was a slip from a friend now absent or perhaps no more on this speck that men call earth. He propagated it for years successively, and still it presents the same mild, modest, blue eyes to the sun, which he admired at first; and the words of poor mad Ophelia, "there's pansies—that's for thought," occur to him every time he goes past it. And it is nearly just so with every plant he has got. A biography of himself is a biography of his plants, and *vice versa*. He cannot allude to an event of any importance, but it is chronicled in the history of some one or other of his vegetable children. Some useful lessons may be gathered from a life like this; for it is presumable that those who have patience to exercise care and diligence with such unremitting perseverance, on the comparatively minor objects of nature's maternity, will not be deficient in the exhibi-

tion of many of those higher requisites which are demanded of us by a more important order of things.

But we will go a little further on. Here is an invitation to "*consider the lillies*," and they are a subject worthy of admiration. This is the Tiger lilly; that the narcissis; the other is the daffodil; and, again, we have the crown imperial; and this here, the most beautiful of all, is the amaryllis. I remember reading of a recent traveler in Palestine, who says, that not far from the probable site where the Sermon on the Mount was delivered, our guide plucked two flowers, supposed to be of that species to which the Preacher alluded when he said, "Consider the lillies of the field." The calyx of this lilly resembles crimson velvet, and the gorgeous flower was of white and lilac: and truly no earthly monarch could have been "arrayed more gloriously than one of these!" The species here spoken of was an amaryllis. Well might Thomson exclaim, on admiring this same flower,

"——Who can paint
Like Nature? Can imagination boast,
Amid the gay creation, hues like hers?
Or can it mix them with that magic skill,
And lose them in each other, as appears
In every bud that blows?"

Observe, too, with what care and wisdom they are constructed so that the great object of their existence—the perfection of their seed, and perfection of their kind—may be obtained. That tulip, yonder, and those roses beside it, raise their bright and beautiful faces to the sun, but the lillies before us hang down their melancholy head—like modest worth in the presence of haughty self-conceit. Their systems of fructification also are just as different. In the tulip, the pistil, or female part of the flower, is shorter considerably than the stamens, or male parts of the same; on purpose, it would seem, that when the proper time comes for the pollen or fecundating matter to be discharged from the stamens, it may fall, as it naturally does, on the stigma of the pistil below it; for as their bells look toward the earth instead of at the sky, of course if the pistil in their case were the shortest, as in the tulip, the pollen would fall to the ground without coming in contact with it at all, and consequently the maturation of seed would be an impossibility, unless artificial means had supplied the defects of nature. But the difference of arrangement spoken of anticipates any difficulty of this kind; for here in the lilly, the pistil is quite longer than the stamens—and still further there is a shoulder, or enlargement of the pistil at the end, so that some of the pollen must necessarily be arrested in its descent to the ground, and the reproduction of the plant is secured. But here is the sweet pea; and we notice that its seed-making arrangement is enclosed in a very pretty covering of the true corolla—by botanists called the keel, as it very much resembles the under side of a boat—and this again is protected by the larger outside petals; and to render their security complete, every particular blossom of the cluster "turns its back to the wind, whenever the wind blows strong enough to endanger the delicate parts upon which the

seed depend. All this seems constructed with wisdom and design, and is as beautifully mechanical as the turning of a vane on a ship's mast-head.

Again, plants do not expand their blossoms all alike, nor at the same time, nor under the same circumstances. The leaves, as well as the corolla are acted upon by some motion known only to themselves; and they close or unfold their apparatus, exactly in proportion to their necessities, and for the various purposes of sheltering and nourishing their buds, their inflorescence or fruit. This is called the *sleep of plants*. Now all these peculiarities and adaptations, and a thousand others which we have not time to notice—and are very suggestive to us of the consummate wisdom and care, with which nature conducts all her arrangements, among her dependent offspring—even what we, in our presumption term the most insignificant. And the moral of it is, that we ought to exercise attention, and cheerfulness, and diligence, in all our relations of life, whether these be to direct the destinies of a nation, or to perform the hard toil of an “*honest miner*,” in the side-hills and gulches around us.

But further; there are weeds in the garden. That bed of hyacinths and this large plot of cabbages, are almost overrun with docks, and groundsel and peppermint; and the goodly plants stand rather a hard show to get more than a tithe of the nourishment which was spaded into the soil for their especial benefit. Their fair proportions, their bright colors, and their natural development, are stunted and disfigured by a mass of selfish, good-for-nothing weeds—the loafers, and instigators of mischief in the garden. So it is in society; so it is with individuals. The demagogue, the professional loafer and office hunter, are nothing but weeds in a community; and our own dear, particular, and favorite vices, are the worst weeds of all we have to contend with, and the most difficult to eradicate. We may hoe them and clean them off the surface, but in an incredible short time they present themselves again, to our infinite annoyance and loss of time and temper and other things, which we sometimes regret when there is no remedy—what is wanted in this case, is some knowledge of our business and thorough, earnest cultivation. Then will the weeds soon disappear so as not to be troublesome, the garden will once more don its fairest apparel, and the ripe, rich, luscious fruits will shed their bounty on happy and intelligent men and women and children, who are capable of appreciating the benefaction.

COLUMBIA, May 26th, 1859.

KELTON.

TO THE PURCHASERS OF SWAMP AND OVERFLOWED LAND.

MANY persons who have purchased swamp and overflowed lands from the State, under the laws of 1855 and 1858, not fully understanding their intent and meaning, have failed to comply with some of their provisions, which failure would prevent the acquirement of title from the State.

The Act of 1855, required payment to be made thirty days from the time the survey was completed—that is payment in full or the first year's interest. In very many cases, payment was delayed for a few days after the expiration of that time;

and although subsequent payments were made properly, still the failure in the first instance worked a forfeiture of the land.

Then again, second and subsequent interest was required to be paid yearly, in advance. It was held by the Attorney General, that interest dated from the time the Certificate of Purchase should have been issued, that is from the date of payment of the first interest money into the State Treasury. In some instances it is impossible for the State Treasurer to certify to this office, the payments by certain individuals for certain tracts. In these cases the interest must date from the payment into the County Treasury.

Last winter I drew up a bill for the relief of Purchasers who had neglected to comply strictly with the Law; it was passed April 8th, 1859. It is entitled "Act for the relief of Purchasers of Lands from the State of California."

One of the provisions of which reads as follows: "Provided further, That the defaulting party shall, within six months from the passage of this Act, present his equitable claim to the Register and prove that all arrearages have been paid up, as required by the Act under which the purchase was made, and *apply for his Certificate of Purchase in the manner which may be prescribed by the Register.*"

Purchasers of Swamp Lands, under the act of 1855, were entitled to Certificates of Purchase, as soon as the first payment of interest was made. Many persons neglected to apply for them, and consequently they were not issued. In many cases, before my term of office, surveys were not approved by the Surveyor General, for various reasons, but were sent back to the County Surveyors for correction, and have never been returned to this office. In one or two instances of this kind, parties have regularly paid their interest money and applied for Certificates of purchase, but as no record of the survey could be found in this office, of course they could not be issued until the matter was explained and the survey rectified, therefore all purchasers, who have not as yet received their Certificates, should apply immediately for them.

It will be borne in mind that in cases where any informality in regard to payment exists, the purchaser must apply for his Certificate before October, 1859, for after that time it cannot be issued to him. For the convenience of those interested, application can be made through the County Treasurers, to whom should be paid the fee of three dollars allowed for issuing the Certificate of Purchase.

If the interest for the several years has been paid, then the Certificate will be issued immediately. If, however, there is a payment still due, the amount should be paid to the County Treasurer, a copy of whose receipt, forwarded to this office by the Auditor, would be proof of the payment, and upon the receipt of which the Certificate would be issued.

It will be remembered that if the six months allowed by the Act for perfecting title should be suffered to pass without applying for the Certificate, then the land is free to entry and purchase by any one.

By law, Certificates of Purchase are made *prima facie* evidence of title. Purchasers of swamp and other State lands have no title until they receive the certificate.

It may be well to state that, in many instances, forfeited lands have been entered

and purchased by third parties. If the application for a re-survey was made prior to the passage of the Act alluded to above, then the first purchaser, although he may have paid interest for two or three years, loses all his rights.

HORACE A. HIGLEY,

SURVEYOR GENERAL AND EX-OFFICIO REGISTER.

STATE LAND OFFICE, }
Sacramento, May 20th, 1859. }

[We give the foregoing, believing it may interest many of the readers of the *Culturist*. ED.]

WILL CALIFORNIA APPLES KEEP?

AMONG the varieties of apples the most noted for their late keeping qualities, it has been usual to rank the Roxbury Russet, Baldwin, White Winter Pearmain and Green Newtown Pippin. But experience has shown that, in a California climate, these varieties do not maintain their character for late keeping as in the Eastern States. It became a question with us, therefore, that if those varieties will not, what kinds have we that will? If the best winter apples known to eastern catalogues will not keep, can we expect their autumn apples to excel them? and, if not, what are we to do for late keeping varieties, or how is our market to be supplied? So far as we have been able to obtain a supply, it has been principally from Oregon orchards; the early establishment of a few orchards there, and the sparcity of population as compared with California, with our superior market, have been the causes operating to bring the fruits of Oregon, and more particularly apples, conspicuously before the world.

We have invited our pomologists to name a few varieties that possessed the quality of keeping till June, in our climate, and in good eating condition; but, until the 27th of May last, no one had responded to our call. True, we had been furnished with a few fine specimens, from different sources from time to time, but all failed to keep later than the 20th of May; and even then were entirely past their prime, and still, Oregon apples were everywhere seen, in small quantities, in our markets, and these, too, of the old well known late keeping varieties. This fact came very near establishing, in our mind, a belief that Oregon apples would really keep longer and better than those of California growth.

But, on the day we mention, the 27th of May, Mr. Chas. Mock, whose residence is four miles from Petaluma, called and presented us with a dozen or more specimens of six different varieties of apples, all in excellent condition and promising to retain it for weeks. But, on being asked to apply the proper names to the varieties, we were utterly at a loss, nor could we see in one of them, a distinguishing mark or feature by which we could identify it as one we had ever known before. They were the Lincoln Russet, Benick, Golden Wiley, Green Skin or Green Cheese, Carolina Greening and Hall apple. Now, here we have six varieties of apples that are all late keeping, though grown in the climate of California, which might have remained

comparatively unknown, but for our article, in a previous number, doubting the late keeping qualities of our apples, as compared with those of Oregon.

We find, too, that they have been entirely overlooked by "the only agricultural paper in the State," not so much as a notice of either of them ever having appeared in its columns; and the only knowledge we ever obtained of either variety, previous to the date given, was from Mr. John Churchman, of Green Valley, Bodega, who showed us specimens of the Hall apple, as a variety that would keep till July; the trees had been obtained from Mr. Mock, or were the product of his importation.

But how happens it that this gentleman should be in possession of some six or more decidedly late keeping varieties, wholly unknown to fame or to the best known nomenclatures of fruits? and where, and how did he obtain them, whilst others have been less fortunate?

Mr. Mock was, for years, a nurseryman and fruit-grower in North Carolina. Finding that the best winter apples of the north, proved but indifferent keepers, if grown at the south, and being determined to obtain varieties possessing the desired property, he began to look about him; and gathering a seedling here and another there, through all the Southern States, where he could hear of one possessing the merit of late keeping, actually collected a very respectable number of good varieties, some of them really excellent, and a few of them astonishing keepers, a character which they fully maintain in the—to the more northern varieties—early maturing climate of California.

The Lincoln Russet originated in Lincoln county, North Carolina; is an apple more than medium size, rich, juicy and brittle; and, though retaining the distinctive mark of a russet around the stem, in this climate it takes a much higher color, and is, in fact, a russet red, with yet darker stripes of red throughout, and is an apple that can be relied upon as good on the first of June.

The Benick. This apple is more than medium size; would be called large among most collections; color, light brown rather than a russet; extensively disseminated throughout Lincoln county as second to but one other variety as a late keeper, grown in a southern latitude and hot climate. At this date, June 20th, the Benick is hard, with no appearance of decay or wilting, possessed of a fine acid flavor, and is indeed a superb apple.

The Golden Wiley. This variety, about the size of the Roxbury Russet, is of a beautiful golden yellow, with dark brown specks thickly strown over its whole surface. It is a native seedling of Guilford county, North Carolina, where it is a great favorite. It has a fine, rich, subacid flavor, and keeps well till the middle of June.

Green Skin or Green Cheese. This variety has much the appearance of the R. I. Greening, but a little smaller and flatter, though a full medium sized apple. Skin a glossy green, dotted with very fine brown specks, and, in some of the specimens, patches of russet around the stem. Rich and juicy and in fine eating condition in April, but keeps till July. It is a variety of peculiarly fine appearance and would prove an excellent market apple.

We come now to speak of the Carolina Greening, an apple of high repute and

deservedly so, wherever known. Like many eastern varieties, this, when grown in a California climate, changes materially in color. Instead of that, so common to most greenings—so named on account of their color—it is here decidedly a red apple; in many specimens red striped upon a bright yellow ground. A little below medium size, it is not a sweet apple and yet can hardly be called sour; fine and juicy, does not wilt, and can easily be kept the year round. It is extensively cultivated among the Quaker settlements of Guilford county, North Carolina, where it is believed to be the best keeping apple known to the world. An anecdote in regard to its quality for late keeping, is told as follows: A Mr. Haigh, a merchant of Fayetteville, N. C., bought of an up country or Guilford county man, a bushel of apples, in October, intending them for winter use; he directed his clerk to put them in a box and place them in the cellar. One year from that time, the same fruit-grower called again, offering for sale the same variety of apples he had sold the year before. It then occurred to Mr. Haigh that he had never opened the box he had directed to be placed in the cellar. On being brought forth, after a full year, hardly a defective apple was found in the whole bushel. We have specimens of this variety now on hand that, to all appearance, will keep till next autumn or winter.

The Hall apple is the last of the six varieties to be described, and, though in size the smallest, it is scarcely inferior to any other in point of quality, as a late keeper and for intrinsic value, it being a prodigiously prolific variety. It is a seedling from the lower or coast country of the same State, North Carolina. In California, its time of ripening or period of perfection is about the middle of May, though we have specimens on hand, 20th June, as plump and sound apparently as ever they were. In the Carolinas it is taking precedence over all others as a late keeping, delicious and beautiful apple, and holds the same rank amongst varieties there, that the Lady apple does at the north.

We have given this lengthy description of six varieties of apples, almost or quite unknown to printed catalogues, as being superior keepers, a quality so greatly desired in California apples. They are seedlings indigenous to a country of long and hot summers, and on this account will doubtless prove admirably adapted to our climate. Another object we have is, to show that, though Oregon may grow a few of the varieties that have proved late keepers in all northern climates, and, to some extent, supply our markets with them, yet California can and already does grow these new varieties, natives of a southern climate, possessing every good quality that apples can possess, in connection with the desideratum of late keeping, notwithstanding our doubts upon the subject, as frequently intimated in volume one of the *Culturist*.

A NEW CARPET.—Mr. Dunn, of London, has patented an article for floors which consists of a composition of cork, flock wool and other fine fibrous materials of various colors, mixed with india rubber. It is said to be durable and beautiful, combining the softness of a carpet with the elasticity and noiseless tread which constitute the beauty of a real "velvet pile Brussels."

WINTER APPLES.

Editor Culturist :—Agreeably to your suggestion, I will attempt to give you my theory and inferences, relative to the process of natural causes in producing late-keeping varieties of apples and pears. Although I assume to illustrate a theory, yet it is by facts and all that has been apparent to inquisitive observation for thirty years.

It has been a matter to excite admiration that, in vegetables, there is that which resembles the instinct of animals. We may say that vegetable life is subject in its processes to exigency. The want of light is the exigency under which the "intelligent potato" in the cellar directs its growth toward the window. The want of time in the arctic regions is the exigency that causes the rapid growth of vegetables, so much admired by travelers; yet this adaptation or modification of process to want, in vegetation, is only the operation of natural laws. Rapid vegetation, in high latitudes, may be caused by the continuance of light during the arctic day.

This acclimation of plants to latitudes differing from that of their origin, is by gradual process. Indian corn is asserted to be of tropical origin, and indigenous to this continent, and was probably brought out from the tropics by the aboriginal inhabitants. It is observable that varieties of corn, from high latitudes, with a shortened period of reproduction of only six weeks, regain their original type on removal to the south—the ears becoming larger and their period of growth longer. The cotton plant also becomes less by its removal from the tropics, and the result is uniform with all tropical productions.

The apple is probably a native of the temperate zone; yet it is subject to this law of adaptation, acclimates to higher and lower or more degrees of latitude than fruits of tropical origin.

I came here from latitude thirty-six north, in North Carolina. Thirty-five years ago but little was known of the fine fruits then in existence and cultivation in Europe and incipiently in the northern States. Some few persons, merchants and others, who had visited the northern cities, had, for their own use, introduced some of the fine fruits—apples especially. The green Newtown pippin had been introduced to North Carolina, under the name of New York pippin soon after its origin.

About 1835, I began to select and cultivate the fine fruits. My selections consisted of native apples and peaches, and to these I added the reputedly best kinds, described by Cox, and Kenrick, and Downing afterwards. In due time it was demonstrated that the northern winter apples had lost their keeping qualities with us, ripening in autumn. Recourse was now had to varieties of native or seedling southern origin, for such only were found to keep through the winter. The inquiry for native varieties has been continued since I left, and the result has been that quite a number of winter keeping varieties have been found originating from Carolina to Mississippi, and of excellent quality. Some of these I brought with me here, and have been receiving others since my arrival. A few of them showed fruit here last season and seem to possess their keeping qualities, notwithstanding the ripening tendency of our long dry summer and warm autumn. Six of those varieties I have submitted to

your inspection, both as to their intrinsic and keeping qualities. I will conclude by observing that the process of acclimation is not by change on an individual, transposed from its native locality, but on the repeated processes of reproduction from seed; for instance, the Roxbury russet and other northern varieties, never would become late keepers in the south, yet their seedlings might.

CHAS. MOCK.

PETALUMA, June 4th, 1859.

BEES AND BEE-KEEPING.

IN every perfect swarm of bees there are three very distinct kinds; the queen or mother bee, the only perfectly developed and fertile female in the community; the drones or males, which vary from a few dozens to about 2,000 in number, and are at certain seasons entirely absent; and, lastly, the common bees or workers, which compose the great bulk of the population, and in a good swarm amount to 25,000 in number, or even more.

Into the exact entomological description of these three varieties it is not our province to enter; but we are desirous of giving such an account of them as shall enable each to be easily recognized.



THE QUEEN.



THE DRONE.



THE WORKER.

The queen, under ordinary circumstances, is rarely to be observed; we have known persons who have kept bees for twenty or thirty years and not unsuccessfully, on the common plan, who have never seen a queen bee.

Those who have been in the habit of working their hives, with glasses at the top, not unfrequently have the opportunity of seeing her about May, when she may be noticed traversing the combs in the glasses in search of empty cells in which she can deposit her eggs. In size and form the queen is so very distinct from the other bees that there is no difficulty in recognizing her even from description. She is much longer than the common bees, and her tail or, more properly speaking, her abdomen, is long, tapering or conical, and pointed; her wings, which are short, only reaching about half way to its point. The longevity of the queen far exceeds that of her subjects, and she often attains the age of four years, and in some cases even more. The queen that leads off the first swarm, in May and June, *is always* the old queen, and not, as is generally supposed by unlearned bee-keepers, a young one of the cur-

rent season. The knowledge of this fact has an important practical bearing, and we are particularly desirous of impressing it upon all our readers; for on the common plan of bee-keeping, as followed by cottagers, the oldest queens are preserved for breeding, and retained when they become sterile and unprolific—a circumstance that frequently leads to the total destruction of the hive as a living colony; and the youngest and most fertile queens, whose lives are especially valuable, are sacrificed over the brimstone pit.

The drones are males, and usually first seen in April, and their early appearance may be regarded as indicative of a prosperous condition of the hive, as may be inferred from the old proverb, "early drones, early swarms." It is related of Bonner, one of the most celebrated of the early Scotch bee-masters, that, although a poor working man, he used always to indulge his whole family with a holiday on the day that the drones first appeared. The drones may be readily distinguished from the workers by their very large size, and from the queen by their bulkiness, by the abdomen not tapering, and by their wings reaching to the end of the body. The number of drones in a well stocked hive is usually estimated at about 2,000, when they are most numerous. The object of this large number is a subject of much dispute, as they evidently take no part in performing the labors necessary to the well-being of the hive; in fact, they rarely quit its interior except during the middle of the bright and sunny days of spring and summer, when they fly forth with a loud droning noise, and after coursing about in the air for a few moments, return again, without alighting on any external object.

The duration of their lives has not been very accurately ascertained; few, however, die a natural death, for towards the end of the season they are ruthlessly murdered by the workers. Being destitute of stings, they offer but feeble and impotent resistance to their armed and agile adversaries. It should be borne in mind that an early destruction of the drones is an almost infallible sign that no more swarms will be given off that season by the hive in which it occurs.

The workers—or neuters, as they are sometimes termed—are now well known to be developed, or rather imperfectly developed females—a circumstance which is proved by the fact that the bees possess the power which they exercise at will, of so influencing any common egg or young grub—which, under ordinary circumstances, would have been hatched into a worker—that it is developed into a perfect female or queen.

This remarkable discovery, was made by Shirich, the secretary of an apiarian society in Lusitania, has been repeated many hundred, or even thousand times, by bee-masters all over the world; it is, in fact, the foundation of the process of producing swarms artificially, a plan which is extensively pursued by many of our most intelligent bee-masters.

The workers, in their ordinary state, do not live more than about eight months, and their number varies greatly at different seasons of the year. Some idea may be formed of their numbers from the fact that it takes nearly 5,000 to weigh a pound,

and that swarms have been known to weigh seven pounds, although one-half that weight is regarded as constituting not a bad swarm.

Upon these workers devolve the whole labors of the commonwealth—they form the wax, build the combs, collect the honey and bee-bread, nurse and feed the young and sacrifice their lives without scruple in defense of their accumulated stores and their beloved queen and mother.—*London Field.*

HONEY BEES.

THE positive interest now felt—and which is so rapidly extending to all parts of the State—upon the subject of bee culture, induces us to devote a small space to an excellent article upon the economy, instinct, and habits of this truly wonderful little winged animal; and, as it also contains a few useful hints to the inexperienced we believe it will not be without its usefulness.

What is here said, respecting the advantages of the Langstroth hive, will apply equally to the Harbison hive, a notice of which appears in our advertising pages. Indeed, the latter is an improvement upon Langstroth's, and its successful management a matter so easily attained, we cannot but recommend its adoption even by the novice, who is willing to devote but an hour to an explanation and study of its use, as imparted by a skillful apiarian.

“Perhaps in the whole range of the insect creation, we find no creature of greater interest than the honey bee. Proverbial for her industry, and producing the very metaphor of sweetness, she stands out prominently as instructive and useful. Her instincts have been from time immemorial the theme of poets and the wonder of philosophers—a creature manifesting almost reason itself.

Her hexagonal architecture has been open to the observation of all, and its masterly design, its symmetry and unparalleled beauty have been the marvel alike of peasant and king. Who can look upon the product of her skill, see in it the irresistible evidences of design, observe its frailty and yet its sufficient strength, its compartments or cells, the base of each forming part of three opposing, her varied operation of cutting down or lengthening them as occasion requires, of sealing them when filled with honey, or they have become the cradle of the young. I say who can look upon these manifestations of her wonderful instinct and not be filled with astonishment and admiration? Yet these are a few of the facts which are more obvious than others. Some there are which, being from their nature less apparent, have been greatly subject to error and consequent controversy. But modern ingenuity and perseverance has well nigh laid open the secrets of her economy, and the wonders of the internal are seen to be, if possible, still more striking. How are the different classes of bees produced, which may be seen in every hive, is a question which more than one eagerly inquiring naturalist has asked. The fact that the queen mother of all the bees contained in the stock is produced from a germ identical in character with those from which the working masses spring, is a truth so well established that no intel-

ligent man pretends to dispute it. How then is the change wrought? We are told that a peculiar kind of food, given in a certain quantity, has the power; and it may be so; but the marvel is none the less. That instinct should enable these creatures to work this seeming miracle, manifesting in it almost reason, to transform a germ deposited for the purpose of raising a working bee—the cell into the peculiar royal proportions, the egg into the unborn monarch—is a most interesting and surprising fact.

The honey bee appears to be domesticated. Is she so? We think that we may fairly presume, certain *savans* to the contrary, notwithstanding, that she is as wild to-day as when, in the days of Samson, honey was found in the carcass of the lion. The attendant of civilization, she still presents an originality of character which many who boast of higher rank would do well to imitate. So long as she is supplied with a tenement suited to her taste, she works as readily in the apiary as in the forest; but let her get the notion that the home in the woods is preferable, and I defy the prince of apiarians to do more than stand crestfallen, fairly outdone, while she shoots like an arrow from his presence toward the location of her choice. When she has decided and is determined, it is as well to forego all the artillery of tin pans, water and gravel, the latter of which are of use in ordinary cases, and the ingenious decoys of mullens on a pole, a basket and all of the thousand-and-one devices besides for they will prove entirely unavailing. Away they go, as if impelled by fate himself, roweling them with an invisible spur, sometimes even refusing the courtesy of a previous alighting. In a majority of cases, however, she may be induced to remain by the presentation of a domicile suited to her purpose. Her manifestations of perversity do not present themselves with sufficient frequency or determination to render this trait a serious detriment to her successful culture. When hived and settled, however, and fairly at work, we are not to presume that she is conscious of her position as a servant to man; but that she merely follows the promptings of her nature, and that the hollow tree of a century, overhanging some chasm of the mountain, would serve her as well as your perhaps nicely furnished and ornamented bee-house. But that she will work, although unconsciously, and to good purpose for her owner, is sufficiently obvious; and we would heartily recommend all, whose circumstances will admit, to make a trial of bee culture. Purchase some standard work on the subject, Quinby's or Langstroth's, study it until you are capable of operating intelligently, and make an initial investment. It is true that, if wholly inexperienced, you will need the guide which we have mentioned, and so does the horticulturist, the stock-fancier; in short the farmer, if without experience, needs and greatly too, some chart to direct his effort. It may be said that land will not be destroyed, even if neglected or most basely treated, which, if true, still leaves farm stock on a par with the bee, and the latter requiring no more time and attention than he who loves honey, and the profit of its raising, is willing to bestow.

If you undertake bee culture, however, remember that the many contrivances claimed to possess the power to awaken the bee to amazing industry, are, in ninety-nine cases out of one hundred, positively useless, if not detrimental. We would do

well to make simplicity the standard of excellence in a bee hive, as in other things. In passing, however, we feel bound in honor to state that the Moveable Comb Hive, patented by Mr. L. L. Langstroth possesses some important advantages. But while we thus acknowledge its merits in the hands of those not wholly inexperienced, it is but just we should further say that, in our opinion, he who is wholly ignorant of bee culture, would do better with the box hive first. We have examined Mr. L's hive, and while we admire the beauty of its theory, the ease with which a great variety of interesting and useful operations may be performed, we must likewise say that the skill which a proper and successful manipulation of the moveable frames requires, would be more than farmers, entirely ignorant of the bee, possess. But the world is in a state of progress, and we hope the time will soon come when in this land of intelligence at least, the knowledge of the most ignorant will be sufficient to enable them to grasp successfully any contribution from the hand of art. Be this as it may, make the trial of keeping bees, and if you make the effort understandingly and earnestly, success will attend and abundantly reward your efforts."—*Dollar Newspaper*.

HOW A VINEYARD WAS PLANTED.

Editor Culturist :—As in these days of successful vine-growing many a man is on a mental committee of ways and means, cost and charges, of commencing such an operation, perhaps an extract from my journal may throw some light on the subject. The soil operated upon was rather a stiff, red clay, with some little gravel, a dry piece in which I had had grain for two years previous, not very profitable. Knowing it would work hard, the manure used was chaff and straw much cut up under the feet of hogs and sheep. The late planting was for two reasons; one, we were not through more necessary farm work, another, the land was not before sufficiently dry to subsoil safely.

March 26, 1856, finished the vineyard, 1,826 vines.

Labor—4 men 1-2 a day manuring.

3 " 3-4 " plowing and subsoiling.

1 man 1-2 " rolling and harrowing.

2 men 1-2 " trenching.

2 " 1-2 " digging.

1 man 3 days trimming cuttings.

4 men 1 1-2 " planting, cutting off and staking.

1 man 1-2 a day plowing.

Total.....16 1-4 days work.

And now for farther explanation :—The digging was for a few foreign vines planted at the end of the natives, to which I wished to give a little better treatment. As the cuttings were weak, the native cuttings were all selected with a piece of two years

old wood attached; hence the extra labor of preparing them. After the ground was plowed, subsoiled, manured and rolled, I set breast-stakes the long way of the vineyard—a skillful plowman making a straight furrow where the vines were to be set from end to end, throwing the dirt each way, followed by a subsoil plow, which not only shook all up below, but partially filled the furrow with the loose dirt. I then set stakes on the sides of the vineyard, drawing a line across it; then, where the line touched the furrow, a man with a tool like a large gouge lifted the loose dirt; another slipped the cutting under at an angle of say thirty degrees. Their progress was rapid, as the line and furrow being their guide, mistake was impossible, and no time required for sight. This finished, a single plow threw the balance of loose dirt into the furrow, a man following the plow bringing to light any of the cuttings entirely covered. This finished, I commenced working a cross furrow with my foot over the vine, each time cutting off every vine near the surface, with a man following behind me with an armful of two foot stakes, (prepared in the winter,) setting one at the point of each vine, and at the same time with his foot throwing a *little* loose dirt over the exposed end. This finished the job. *Every vine lived, and have never been irrigated.* Some bore last year; all promise fruit this year. We will move these stakes to a younger vineyard, replacing them with the permanent stakes. This vineyard has given more satisfaction than some others planted at greater and at less expense—the only present objection being that the vines are too close one way (4 1-2 feet) for easy cultivation.

UP COUNTRY.

THE TAP-ROOT.

Mr. Editor:—The *Culturist*, for March 15th, is just received, and the triumphant article (?) of the editor of the *California Farmer*, on the tap-root, has been read and considered. We are willing to admit, as a reconcilable fact, that the editor of the *Farmer* has just such a "*lusus naturæ*" as he describes. We suppose this is a tree of one season's growth from the seed: we suppose, of course, that this tree, like all other plants, spent its early growth in establishing those parts most essential to its *future* growth, firmness and durability: we are fully of the opinion that, in deep, porous soils, and everywhere else, if nature forms these roots, they are of the first importance to protect the tree from the effects of drought by reaching so low that moisture is always accessible. It may be that this good, sensible tree knew better how to grow than man knows how to direct its growth, was fearful of high winds, whereby it might be overthrown and lost; and, on that account, sent its long tap-root into the earth to counteract their influence. Let its motives be whatever they may, they were good—true to nature, who is the very best teacher in tree affairs.

A tap-root, five feet long! This shows very conclusively, that that root was after something that was not obtainable near the surface, and that its first object was to attain that something. It did not send a few meagre roots around near the surface, as modern art in tree culture would teach it to do. I hear it was a "clean straight tap-root"—no branch on the root; nothing said about the spongioles, so we may infer

it had a plenty of them, which, on a tap-root five feet long, would be enough for such a tree to bring it all the *earthly* nourishment its past stage of growth would require.

Then it had "a clean straight top—seven feet top—no branch upon it." Why, we have sometimes just such tops—in cold New England—only, perhaps owing to our short seasons, not quite so vigorous; yet we have seen clean straight tops, four feet long, without a branch, here in the home land. If we could be assured our trees had such roots, we should rejoice to have it so. Here were the rudiments of a beautiful tree.

We regret that our connoisseur friend did not allow this wonderful tree to stand another year. The result probably would have been that the straight, long, beautiful top would have grown some longer and have thrown out branches to form a beautiful head, and that long, straight tap-root would have made another push towards the center of gravity, and would have thrown out side roots, just where it saw fit, in proportion to the spreading of the top. And this tree, had it stood where it had room for expansion and been allowed to take care of itself and grown without mutilation, would probably be a veteran tree a century or more hence, flourishing and fruiting for other generations in a vigorous old age. It is just such a tree as we would like an army of, for it is a true and perfect tree.

The anti tap-root fever has run high in New England; for the nurserymen at the East have tried to make the people believe that if a branch of a root was grafted it would make a good tree. In this way, the root of an apple or pear tree would be divided and subdivided and *trees manufactured* for wholesale. In the last dozen years many fruit trees have been set in orchards, and, of all that have been set, probably not more one than a half are now living; and of this living half, another half will probably be ready for the bonfires before they show their first fruit. The nurserymen say these losses come from careless setting and after negligence. In some instances, this may be the case; but we have seen trees, just from the nursery, that looked about as hopeful of future growth as a last year's pea bush—all from deficiency of root.

Here, cultivators are taking lessons from nature in spite of the theories of nurserymen, and these lessons are taken in old fields and along the fences where casually planted trees spring up and with no care but protecting from cattle, grow and form beautiful tops. Such trees may not grow so fast as those started and crowded forward in nurseries, but they make firm, enduring, long-lived trees. The sod is seldom broken around them, unless it be in valuable plow-lands. No one goes down to cut off the tap-root; there is no root pruning or root dividing; the tops usually need grafting, sometimes thinning. The borer, greatest pest of highly cultivated trees, seldom disturbs them. They have few if any ailments of any kind, and such as they have, a full and healthy organization enables them to counteract. They are the trees to live and flourish, and man taking a profitable lesson from them, is being taught the wisdom of increasing their numbers.

We recollect the time when docking horses was all the fashion, insomuch that a natural tail upon those animals was very rarely seen; but this barbarous practice is now done away with; no one thinks of mutilating this useful animal by divesting it

of one of its beautiful and useful appendages; on the contrary, a hardy, bushy tail is taken as an emblem of strength as well as beauty.

The same opinion will exist with regard to trees, when this mania of mutilation dies out, and then the universal conclusion will be that it is best to let nature form the roots of trees pretty much after her own fashion. This may safely be done; in deep, dry soils she will send down a long tap-root to secure firmness and moisture; in shallow soils, resting on cold, damp subsoils, she dispenses with the tap-root as a descending appendage, gives larger and wider extending lateral roots, so that the force of the tap-root is not diminished, but thrown out in new forms adapted to the growth and stability of the trees. Now, no one would think of going into an old pasture of a shallow soil, and taking up one of these trees whose roots, from necessity, must spread far near the surface to secure it from the influence of winds and to give it more ample pasturage, and cutting off one of the principal roots near its junction with the main stock. On the contrary, they would rejoice in the number and size of fine branching roots that it had gained; and yet the tap-root is here in a new form, adapting it to its circumstances.

In view of this subject, we see the advantages that will arise to all cultivators from a knowledge of the physiology of trees and plants. In fact, the whole science of botany, in its widest range, is emphatically a science for the cultivators of the soil. Its benefits, if it were thoroughly understood, would be incalculable. It should be taught in every family and in every school-room; for it would not only direct in many of the employments, but would furnish beautiful subjects of research in every field.

Formerly there were justifiable reasons for the neglect of this study. Text books were imperfect and the science was clothed with technicalities unknown and unutterable by the many. Then, one of the beauties of science was to clothe it in mystery, and confine its merits to the few. But learned men have grown wise; now they see and realize that the mysteries of the natural world belong and should be open to all. As a result, they are giving us text books, written in a style attractive and comprehensible to the young. This is emphatically the case with a series of botanical works, prepared by Professor Gray, of Cambridge University, and published by Messrs. Ivison & Phinney, New York.

The Professor commences this series with a beautifully illustrated work, entitled "How Plants Grow," in which he shows us the plant, *tap-root* and all, in the various stages of its growth, and gives us a full and concise view of the properties and uses of its various organs.

This work is followed by familiar and useful lessons on botany, which leads the young pupil another stage in the ascending scale. These two volumes are of incalculable value; can be studied without a teacher, and are admirably adapted to the common school-room. "Structural and systematic botany" is alike readable by any good reader, but requires more maturity of intellect than either of the former; while the "*manual*," with its beautiful illustrations of the ferns and mosses—a new and attractive feature—forms the apex of a series of unrivalled attractions. We anticipate the time, with great pleasure, when these works will be duly appreciated, and their

contents will be known and understood by every intelligent cultivator of American soil, whether along the Eastern shores or along the more fertile coast of the Pacific. Then, how many questions that now vex us, will be understood and proved settled! How many of the false theories of the present day will be forever abandoned! Science will become the labor-saving machinery of art, and knowledge grow up in the deep soil where ignorance, deep-rooted and despotic, has usurped and poisoned the soil.

Yours truly,

RICHMOND, Mass., May 6th, 1859.

WM. BACON.

AGRICULTURE OF LOS ANGELES.

ON the 18th of July, 1858, the Visiting Committee of the State Agricultural Society left San Francisco to inspect the farms, gardens and vineyards of southern California. From the manuscript notes of the committee—now in the hands of the State printer for publication—we are permitted to extract the following interesting description of the scenery, climate and products of a portion of the country visited. We are indebted to the courtesy of O. C. Wheeler, Esq., Corresponding Secretary of the State Agricultural Society, for the opportunity of presenting it to our readers in advance of its regular publication in report form.

"The trip from San Diego to Los Angeles, overland, a distance of one hundred and thirty to one hundred and seventy miles, according to the route traveled, is one of rare interest, and will afford the traveler many new ideas, unless he has learned more of the topography of the country than has yet been published. At this season of the year—July and August—the whole face of the country presents a general aspect most forbidding; but, upon particular and minute examination, it is much relieved. What appeared in the distance like huge drifts of yellow sand and dark piles of volcanic rocks, are discovered to be rolling hills covered with wild oats, and with the remains of a heavy crop of clover; the former a bright golden color, and the latter a dark muddy brown—in each the natural consequence of ripening in the sun. The face of the country, instead of being, as is generally supposed, a vast plain, either level or slightly rolling, is the most perfect succession of hill and valley that it is possible to imagine. The hills rise from one hundred to five hundred feet high, with sides sufficiently sloping and tops sufficiently rounding to admit of the use of the team and plow almost universally. These hills are everywhere separated by valleys of corresponding form, both without the least pretension to regularity, shape or course. The valleys are of all widths, from half a dozen yards to a mile and a half; and of all lengths, from a single furlong to twenty-five miles. No better idea of the face of the country, perhaps, can be obtained than by supposing a thousand specimens of fruits, of all shapes and forms, each divided in the middle, laid flat side down, upon a yielding surface, and in general proximity to each other, and then water poured in among and run through them until the edges disappear and the sand has assumed hollow basins, trenches, ditches, etc.—some higher, others lower; some sharp, some

round; some long, some short; some globular, some pyriform—all in utter confusion, yet all in smooth and beautiful harmony. Standing in any of the valleys you can nowhere see out. Standing on one of the highest hills, you see only a few elevations and depressions within a few miles, and then the whole assumes the appearance of a vast undulating plain as far as the eye can reach in every direction. This is true of thousands of square miles in San Diego, San Bernardino and Los Angeles counties. The soil is generally a rich, dark mold, interspersed with districts of volcanic scoria, yellow sand, dark gravel, etc. In the rainy season and for months succeeding, nothing exceeds the rich green of the growing oats, and the fragrance of the clover in bloom. Whole districts, of leagues in extent, which were thus beautiful with clover in the spring are, by midsummer, covered with a dark substance, which, to the stranger, looks like the result of a consuming fire, leaving nothing but death and destruction in its pathway. But this substance is mainly composed of the heads of the clover, dried in the sun, full of seed, upon which the cattle and horses feed with avidity and fatten very rapidly.

“Such districts of country as we have attempted to describe are skirted and occasionally broken up with fragments of irregular and broken mountain chains, of moderate height. It is only occasionally that a tree is found. Sometimes, by a water course, a row of small willows or elders, and occasionally, in a valley, a few shrubby oaks are to be met with; but, in general terms, the whole country is without timber. The mountain ranges form an exception to this rule. Among some of them there is found a tolerable fair article of timber.

“The lands are principally owned by the holders of Spanish or Mexican grants, and many fertile tracts are in the market, being offered at the rate of \$1,000 per square league, or less than twenty-five cents per acre. Smaller tracts of really desirable land can be purchased at \$3 per acre, and good titles obtained.

GRASSHOPPER FEED.—Noticing an unusual quantity of weeds, many of which seemed to be actually cultivated and fostered, we inquired the reason, and were informed that it was for the purpose of feeding grasshoppers, which at times are very troublesome, and were it not for the fresh green weeds would destroy grains, vegetables, trees, vines and everything else. But finding plenty of weeds they became satisfied with them and would spare at least a portion of the domestic vegetation.

THE LOS ANGELES VINEYARD SOCIETY.—During the afternoon we passed the large establishment of the “Los Angeles Vineyard Society,” situated twenty-six miles southeast of the city of Los Angeles. This is composed mostly of Germans, fifty in number, and was originally designed by a combination of small amounts to furnish good houses and fair returns for the proprietors. The company was organized, a suitable and desirable location sought and 1,200 acres of land purchased in a square form, for a sum of money equal to \$750 to the share, amounting to \$37,500. A general manager was employed, who hired his own hands and conducted the whole thing under the direction of the company. The place was enclosed by a live fence made by inserting willow poles, eight feet long, two feet in the ground and within

three inches of each other. These take root in the moist soil and soon form a beautiful and impenetrable fence. The place is laid out into blocks of twenty acres each with avenues between. In the center of the whole plat is a square of fifty acres divided into fifty parcels of equal size for the residences of the families and the necessary kitchen and fruit gardens. After one year the place is fenced and one-half well cultivated and planted with 500,000 vines which are in a prosperous condition, a water main, ten miles long, bringing from the mountains ample means for irrigation, and four hundred miles of *zanka* or small ditch for conducting the water through the place, the ground prepared for 500,000 more vines, and \$7,000 of funds still in the treasury.

Should corresponding success continue and the original design not be frustrated by the purchase and consolidation of shares, these fifty families will, in a few years, each own a good house with an orchard of sufficient extent for domestic use and a vineyard of 20,000 vines, producing an annual income of at least \$10,000.

LOS ANGELES RIVER.—The Los Angeles river rises in a range of hills or mountains, about sixteen miles north of the town, and is increased by additional springs from the hills, through the gorges of which it makes its way seven miles, when it debouches upon the plain and runs rapidly, partly in natural, and partly in artificial channels, to within five miles of the city, when it is dammed, and the larger portion of it is conducted in a ditch to the upper end of town, whence it is spread in *zankas* of various sizes through every place whose proprietor chooses to avail himself of the boon. The works being under the control of the authorities, and their repairs being attended with little expense, the annual cost to an individual for as much water as he needs is but a mere trifle. The water is clear and sparkling as the bubblings from a crystal fountain, presenting a striking contrast with the water in those portions of the State where mining muddies all the streams.

The descent is so great here that, by a little attention, the most beautiful cascades and fountains may be constructed in almost any place where desired.

After having passed through the town, dispensing its blessings, this beautiful stream runs only about three miles, when it gradually sinks into the loose and sandy soil, and appears above ground no more.

THE SAINSEVAIN ESTABLISHMENT.—They have forty-one acres in vineyard, from which they made last year 60,000 gallons of wine. The age of their vines ranges from ten to sixty years, the oldest of which are most productive. They also buy grapes of their neighbors, and make large additional quantities of wine. They have two hundred peach trees, from which they expect at least 15,000 pounds, all of which are contracted for at thirty-seven and a half cents per pound. Also, pear, fig, and other ordinary fruits, sufficient for family use.

They have an orange grove of two hundred and fifty trees, twenty of which are fourteen years old, very large and beautiful, the fruit from which was sold last year for \$1,000; and also fifty citron trees, ten and twelve years old, bearing monstrous fruit.

The wine cellars are five in number, one hundred and thirty-five feet wide, and now contain 50,000 gallons of wine, 6,000 gallons of vinegar and 5,000 gallons of brandy, the latter being quick of sale at \$3 per gallon when three years old.

The celebrated "Sparkling California" wine is from this establishment. Mr. Sainsevain informed the committee that he was now regularly filling a standing order for three hundred dozen per month of this wine, at \$12 per dozen, receiving his cash in San Francisco—the wine to go to New York. He was also in receipt of an order for the same amount from Philadelphia, but could only meet the demand in part.

LARGE FIG TREES.—On the place of Don Manuel Requena we measured the trunk of a fig tree, which was seven and a half feet in circumference four feet from the ground. The pear, peach, almond and English walnut trees are very old and large. Besides, he has the Shaddock, the citron and the lemon in full fruit.

A fig tree on Mr. Wolfskill's place has five branches which had drooped to the ground and taken root like the banyan tree of the Indies, forming a perfect bower.

THE MONTE—TALL CORN.—Titles to this land are unsettled. The claimants under Mexican grants feel sure of final success, although it is now mostly in the hands of squatters. The farms are fenced with growing willows. W. W. Rubottom has a settler's claim to 160 acres, all under cultivation. His vineyard consists of 15,000 vines, young but promising well. He has fifty acres of Indian corn, ranging from fourteen to twenty-two feet in height, with from two to four large ears on a stalk, promising at least one hundred bushels per acre.

OLIVES.—On the grounds of the Mission San Fernando are five hundred old olive trees, from which the proprietor says he has made eight hundred gallons of oil in a single season.

SALT WORKS.—The Pacific Salt Works, located on the sea coast, fifteen miles from Los Angeles, cost \$36,000. The lake of salt water from which the vats are filled is one hundred and twenty-five yards wide and about five hundred yards long, with a mean depth of about two and a half feet, the surface being six feet above high water mark in the sea, from which it is distant five hundred yards. Its great peculiarity is its extreme saltiness, being, it is said, thirty-eight degrees more impregnated than the water of the famous Syracuse (N. Y.) works in saltiness.

PECULIARITIES OF SOUTHERN CLIMATE.—Few persons have a correct idea of the climate of this section of the country. Being five hundred miles to the southeast, we naturally expected to find it much warmer than in the valley of the Sacramento, and accordingly went prepared with thin summer clothing, but we did not need it. We found the temperature very even, and so low as to make flannels and cloth garments entirely comfortable. The range of the thermometer here is extremely small, and hence very little change in the character of clothing is needed in the entire year. From fifty-eight to seventy-five or eighty is the common range of the thermometer. Another fact is quite as surprising as the temperature is, the lateness of

the time when the fruits ripen. The same varieties of fruits cultivated similarly, are from fourteen to thirty days later in ripening than they are in the valleys of the Sacramento and Feather rivers.

AGRICULTURE ABOUT LOS ANGELES.—The agricultural operations in and about the town of Los Angeles may be summed up thus: 2,000 acres under cultivation, of which 1,200 are in vineyards, averaging 1,000 vines to the acre; the remainder in grains, vegetables, orchards, etc. The vines will produce, the present year, 600,000 gallons of wine, and in three years more will double that amount. Meanwhile, the number of vines now standing will perhaps be also doubled.

THE SCARCITY OF TIMBER.—In many portions of the southern, there are groves of timber covering tracts, miles in extent, but all of it young, appearing to have sprung up within the last quarter of a century. Upon asking an explanation, we were informed by an intelligent American who has resided in the country between thirty and forty years, that, in former times, extensive fires, during the dry season, were very common, destroying everything in their way. These fires were caused by travelers, who left their camp fires in the morning in such a state as to catch and spread. Thus all old timber was killed and none permitted to grow up to supply its place. The feed for stock was also consumed and the ruin of the country seemed inevitable until the authorities enacted rigid laws on the subject, and affixed severe penalties to their violation. The laws were rigorously enforced until several examples were made, by the infliction of condign punishment. As soon as this determination, on the part of the authorities became manifest, travelers became cautious, the fires ceased and timber began to grow wherever the soil was adopted to sustaining it; and hence the fine groves of young timber which we now see.

GOVERNMENT LAND.—On the road from Los Angeles to San Pedro, there are considerable tracts of good land which have reverted to the Government from Mexican grants whose limits have not conformed to the surveys.

MISSIONS AND MISSION LANDS.—During the tour of the Committee to the South, the following facts relative to the Missions and Mission lands were gathered, partly by personal research, and partly from other reliable sources of information; but chiefly through the kindness of Isaac Hartman, Esq., of counsel for the United States in certain land cases in this State:

“From the possession and settlement of the country by the Spaniards, or at least from the advent of the Missionaries, up to November 21st, 1828, all public lands and all the personal property in the country were held and controlled by the Missionaries, nominally for the Government. On the above day, the Congress of the Supreme Government of Mexico adopted “General rules and Regulations for the Colonization of Territories of the Republic.”

On the 17th of August, 1833, the Mexican government passed an Act to “secularize the Missions.” This Act allowed to the parish the church edifice, the most suitable for the residence of the officiating clergyman, with a lot of ground not exceed-

ing two hundred yards square, together with buildings suitable for primary schools and other public establishments.

On the 3d of November, of the same year, the Government passed an Act bringing all the Missions under the colonization laws, thus taking all civil power from the priests.

On the 16th of April, 1834, another "secularization" Act was passed, still more stringent, to take effect four months thereafter.

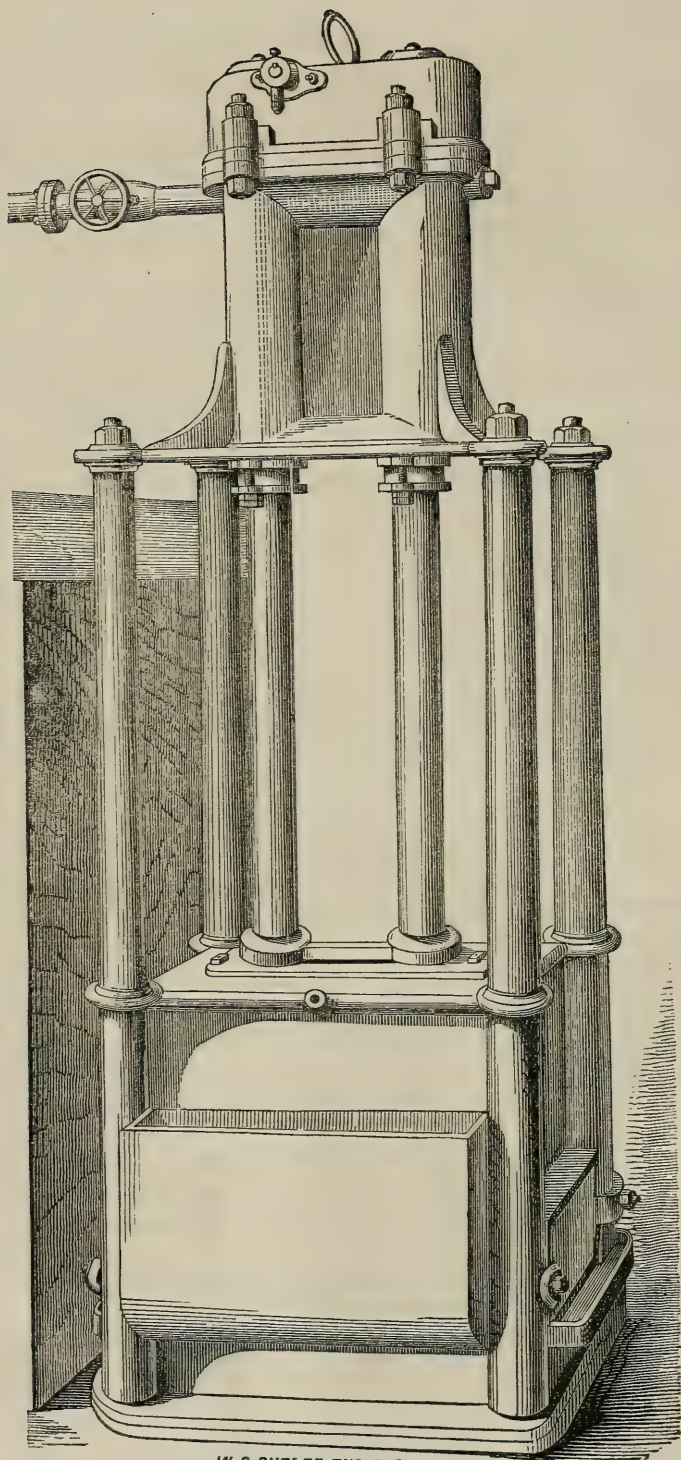
Up to the early part of 1840, all the acts of the Colonial or Territorial Government of California were in obedience to and harmonizing with the decrees of the Supreme Government on the same subject.

The Mission herds had been distributed through the country, as loans from the priests to the colonists which the secularization Acts had induced to settle in the country.

Late in the year 1842, General Manuel Micheltorena, under appointment from the Mexican Government, as Governor of California, arrived in the country; and placing a very liberal construction upon certain extra powers granted him, in March, of the following year, he issued his decree for the restoration of the Missions of San Diego, San Luis Rey, San Juan Capistrano, San Gabriel, San Fernando, San Buenaventura, Santa Barbara, Santa Cruz, La Purissima, San Antonio, Santa Clara and San Jose, to the priests, to be again ruled, governed and disposed of by them as they were before the secularization, and also that all property should be restored. This Act so incensed the settlers in the country that they made hostile resistance, and finally drove the Governor out of the country.

Pio Pico succeeded to the powers of Governor, and commenced a series of legislation which culminated in a sale at auction of immense tracts of Mission lands. These sales were by his successor declared to be extra judicial, and hence null and void; and on the 31st of October, 1846, the Territorial Legislature sanctioned and established said declaration. Hence, a series of conflicting titles to hundreds of thousands of acres of the best lands in the State, some idea of which may be gained from the following statement of the amount of land belonging to the different Missions: San Diego, three leagues; San Luis Rey, thirty-eight leagues; San Gabriel, three and a half leagues; San Fernando, fourteen leagues; San Buenaventura, twelve leagues; Santa Barbara, three leagues; Santa Agnes, two leagues; Purissima, three leagues; San Miguel, twelve leagues; Soledad, two leagues; San Jose, seven leagues; Dolores, three leagues; San Rafael, eleven leagues; making an aggregate of more than half a million acres, besides small amounts connected with eight other Missions.

It is the judgment of many well-informed and able jurists, that these will all be rejected. If this should be so, these lands must, sooner or later, become the homes of thousands of happy families, adding vastly to the real wealth and desirableness of our country."



W. C. BUTLER. ENG. S. F.

THE PERCUSSION QUARTZ MILL.

THIS mill is believed to be the simplest, most compact, and cheapest mode by which steam can be applied to crushing quartz, as the power is made to act directly on the quartz without the complicated and expensive machinery in common use. It consists of a battery, of the ordinary form but made of iron, with screens on three sides; the battery has a cast iron cover on which four columns stand, and on them is bolted two cylinders, cast together, four and one-half inches long by thirteen inches stroke; the piston rods pass through the bottoms of the cylinders into the stamps inside the battery. At the top of the cylinders there is a steam chest in which the side valve, valve lever and valve pistons work; the latter extending through stuffing boxes into the cylinders. The steam passages are cast so that steam is admitted to the top of one cylinder and bottom of the other at the same time. When the steam is let into the steam chest it passes to the bottom of one cylinder, under the piston and lifts the stamp, which is fast to the lower end of the piston rod. The piston, when within one and one-fourth inches of the top of the cylinder, strikes the valve piston and moves the slide valve, shutting off the supply of steam to the bottom and applying it to the top of that piston, driving it down with great force, at the same time lifting the other stamp.

Three hundred blows per minute is the usual number made; at which speed the two stamps crush sixteen tons of quartz per day, so as to pass through the finest screen. The size of the mill, on the ground, is two by three feet, and it can be set up in working order in one day.

The loss by friction in the common mills is from fifty to seventy per cent. of the power applied; on this mill it is but about eight per cent., saving more than one-half the fuel. The cost, set up in the mines, is but about one-fourth that of any other mill doing the same work.

The mill is the invention of Edward T. Steen, of San Francisco. The patent right is now owned, and the mills are manufactured by Steen & Nichols, San Francisco and Sacramento.

ROSE CULTURE.

THERE are flowers that bloom in beauty often, in soils so poor that the plants that bear them seem to derive their chief sustenance from the air; but the rose—queen among the flowers—can only be produced, in perfection, in soils rich, deep and loamy. The rose bush will grow in almost any soil, and yield its flowers; but unless the soil be what is termed a strong, sound loam, it is useless to hope for a perfect bloom. Many who cultivate the rose in pots, are disappointed because their plants never produce the same fine bloom they did the first season they procured them, and they wonder at the cause. True, there is much in judicious pruning to give symmetry

and strength to the bush, but for the development of the blossom, nothing will compensate for the absence of a rich and generous soil.

Most roses, bought of florists, full and heavy in their bloom, are but recently potted plants, growing in an artificially prepared soil of great strength, and, for a single year such plants are all that can be desired; but to be compelled to remain in the same circumscribed limits from year to year, extending their tops, but with no room for the further extension of their roots, is asking too much of a plant so luxurious and prodigal in its growth of beauty as is the rose. So that when you see your roses, of whatever variety, putting forth but imperfectly formed bloom, depend upon it they are poorly fed.

PROPAGATION.—Roses are propagated by seeds, cuttings, layers, suckers and by budding. Almost all the China and nearly all of the more delicate varieties grow readily from cuttings. A moist, warm and rich soil is requisite, and it is more necessary that the soil be warmer than the atmosphere; this facilitates the formation of spongioles, afterwards to become roots; but a moist atmosphere is also a great auxiliary to the growth of all cuttings. To effect this, it is the practice, with many skillful florists, to cover their cuttings with bell glasses, that, resting upon the soil at bottom, prevent the escape of the moist air generated by evaporation from the surface; care must be had, however, that too much heat be not generated within by the too powerful effect of an unclouded sun upon the glass.

Roses are propagated from seeds only when it is desired to originate new varieties. Layering is a very sure way of propagating almost any description of plant, but particularly the rose. Midsummer is the proper time for layering. Shoots of the current year should be chosen of sufficient length to allow of their being bent and covered three or four inches beneath the ground and securely fastened, and yet have three or four inches of the end above the surface. That portion below the surface should have all its leaves removed, and directly opposite the deepest buried bud, a diagonal cut upwards and partly lengthwise of the stock should be made at least half way through and kept open by crowding in a little soil between. This operation greatly facilitates the emission of spongioles and roots. The layer should be pegged down and care used that it be kept in position. The soil should be kept moist by being partially shaded or, what is better, covered with moss or any other substance that serves as a mulch to prevent a too rapid evaporation of the moisture of the soil above the buried portion of the stock. The leaves should be allowed to remain on that portion above ground.

Some of the more common and hardy varieties of roses produce suckers in great quantity around their stems. These can be removed in autumn with more or less of root attached, and are easily grown either in pots or the nursery row for the first year.

Budding is resorted to, in the culture of the rose, only when it is desired to increase largely the variety, beyond the ability of the florist to grow them on their own roots. Some varieties, however, are better bloomers when grown upon the more hardy and

luxuriant stock of the common or dog rose; but seldom do we see so perfect plants as when grown upon their own roots; and, could we obtain them, we would have no other, either in pot or parterre.

Much depends upon the habit of the stock upon which the rose is budded; for it is of more importance in rose culture, that the soil suits the stock, than the variety budded upon it; hence when grown upon their own roots, they require a greater modification and variety of soils than they otherwise would. The Tea or Bourbon roses, upon their own roots, require a lighter soil than would be desirable for the more common kinds, but it should be made rich and its fertility should be perpetuated by frequent application of liquid manure. Roses, set in the open ground, require depth of soil—the deeper the better; then, if sufficiently moist, and a judicious system of pruning is pursued, neither the heat or drought of our climate will affect injuriously their bloom; but still the rose ever delights in the summer shower, and showering is preferable to watering only the soil. But for the time required, it would not be objectionable that they were showered once a day, choosing the time when the least dust would be likely to adhere to the moistened leaves—the early evening, if still, would be the best time.

A convenient liquid manure, for pot plants or those of open ground culture, is made of two or three ounces of guano in a gallon of water, and a thorough irrigation of the roots only, say once in ten days.

THE CORK OAK.

AMONG the many varieties of seeds of trees, plants and vegetables distributed, through the medium of the Patent Office, to all parts of the Union, have been the acorns of the cork oak. We hear, from several localities, that success has attended their planting and that every indication of a future successful growth is presented.

Mr. E. Dresel, of Sonoma, out of one hundred acorns, has over eighty growing finely and presenting a thrifty appearance. In the grounds of Mr. J. Morrill, of Sacramento, we also saw a number of specimens doing finely. Many who have given them a trial have not been as successful in procuring their germination; the cause, we are inclined to think, has been, in too many instances, the want of a proper knowledge of the best mode of conducting the experiment of their growth.

In the instance of Mr. Dresel; he planted the hundred acorns all alike, in the same kind of soil. Fifteen of these he watered, from time to time, during the season when they ought to have germinated; mark the result: not one of them grew. The remaining eighty-five were not watered at all, and eighty-one or two of them germinated, and are doing finely.

As usual with seeds sent from the Patent Office, instructions accompany the packages, as to the best soils, time of planting and mode of culture. We noticed with the cork acorns a recommendation that, if possible, it is better to plant the acorns in the

places where it is desired the trees shall stand. This is just in accordance with our "new doctrine," of planting the seeds of trees where they are to remain. The next best management to this is the transplanting of the young trees at as early a day as possible, that, on removal, they may suffer no injury from loss of the deeply penetrating roots called tap-roots, so essential to the growth and longevity of trees in all countries and climates ; but particularly in the unrefreshed, unraind-upon, six months furnace-heated climate of California.

That the cork oak can be grown to the highest degree of perfection in California, hardly admits of a doubt ; but we sincerely hope that our planters will not all follow the advise of some of our nurserymen, of planting their trees in nursery rows, to be taken up and reset in the same nursery for three or four years consecutively before their final setting. With little or no moisture in the air, and, if possible, still less in the surface soil, why not let the roots run down to moisture ? unless you intend to keep them irrigated artificially.

THE CHUFA OR EARTH-ALMOND.

THE chufa (*Cyperus Esculentus*) or earth-almond, as it is frequently called, is a native of Southern Europe, and is very extensively cultivated in Spain, as a food for both man and beast, and also as a basis for the cultivated orgeat that bears its name. This plant is a perennial, growing in the form of a rush, to the length of about three feet. Its root, which is its only valuable part, is composed of small tubers, about the size of a moderately large bean, numbering from eight to a hundred and twenty or thirty to a plant. The chufa has a pleasant taste, very similar to chestnuts or the meat of the cocoanut, and is eaten either raw or cooked, as the fancy of the consumer dictates. It requires no cultivation during its growth except to be kept free from weeds, and seems so particularly adapted to our warm climate and light, sandy soils that it bids fair to eventually become a very valuable crop in localities where food has to be cultivated for fattening cattle, swine or poultry ; though at present we would not advise its being grown except in comparatively small patches for chicken-feed, and as a means of becoming better acquainted with its habits, prolificness and value ; albeit writers on Spanish agriculture give almost incredible instances of its profitableness, asserting, in some cases, that the annual yield realizes from \$300 to \$400 per acre ; but their asseverations must be taken with a great deal of allowance for exaggeration.

The tubers of the chufa should be planted as soon in the spring as all danger of very severe frosts is past, though, in this State, there would be but little real danger even if it was planted in the fall or winter. If the crop is to be a large one, plow the ground well and harrow it at least twice, so as to pulverize it very finely ; or, if the experiment is to be on a small scale, spade and rake as for a garden ; then plant about a dozen roots in a bunch, in such a manner that no one tuber is less than six inches distant from its nearest neighbor, and make similar bunches over your whole

ground. Keep it free from weeds while growing, and dig it as you want it, from midsummer until fall. In the fall you can take it up, let it lay a few days to dry, and then store it like potatoes, or you can allow it to remain in the ground, digging it as required.

That the chufa is worth about five times as much as potatoes, and is equal to, or better than maize as a fat-producing food, will instantly be seen by comparing the analysis of the three, which are as follows—the potato being the cultivated Mercer variety, and the corn (maize) being the average of five varieties:

	CHUFA.	POTATO.	MAIZE.
Water.....	15,50.....	75,80.....	12,92
Cellulose and Fiber.....	21,45.....	3,62.....	13,10
Sugar.....	12,25.....	0,00.....	1,80
Wax.....	0,50.....	0,00.....	0,00
Fat, or Vegetable Oil.....	16,65.....	0,00.....	3,64
Starch.....	27,00.....	12,54.....	59,98
Mucilage, or Gum.....	5,20.....	0,00.....	0,00
Gluten, or Zeine.....	0,00.....	0,00.....	4,44
Caseine and Albumen.....	1,45.....	0,00.....	2,28
Not separated.....	0,00.....	8,04.....	1,84
Total.....	100,90.....	100,00.....	100,00

It is evident from the above that the extraordinary excess of heat-giving and fat-forming constituents makes the chufa, like Indian corn, one of the best foods known for fattening purposes; whilst, at the same time, it is too heating, and, in consequence of its deficiency in albumen, caseine, legumin, gluten and other blood and muscle-producing elements, not flesh-giving enough to be used entirely by itself continually. But after the solid flesh has been grown by other food, either separately or mixed with it, the chufa will probably, in practical experience, be found to be very much cheaper, and, at the same time, superior to Indian corn in quickly laying on the necessary amount of fat to fit the beast for the shambles, or the chicken or turkey for the roasting spit, as one-sixth of the chufa is already oil, or adipose matter, requiring but little labor from the digestive organs to assimilate it and place it in its proper position on the animals, whilst with corn, the starch, etc., has to undergo a chemical change in the stomach and be reduced to oil before it can be laid on the ribs as fat.

Without insisting upon any extensive cultivation of chufa, at present, in this State, we hold that it should be raised, in a greater or less quantity, according to the number of fowls, at every establishment where hens are kept, either for pleasure or profit; for we know of our own knowledge, that they are very fond of the tubers, and eat them with avidity, whilst the analysis shows that they are a very proper food; but, owing to the very small quantity of tubers we had to experiment with, we are not yet prepared to fully endorse the enthusiasm of a lady correspondent of one of our Atlantic agricultural exchanges, where she exclaims:

“Do you know that chufas are the very best food for fowls? especially those designed for the table. They give a sweet and delicate flavor to the flesh, which no other food imparts. I made this discovery by accident; our chickens having been in the habit of stealing chufas from a neighboring field, I noticed a very great improvement in the flavor. After a while they become so fond of the chufas, that it was impossible to keep them out of the field; they lived on them entirely, not taking any other food which we threw to them, and the flesh became absolutely delicious. I do not believe that any game in the world can be better than a chufa-fed chicken.”

As about one-sixth of the weight of the chufa is vegetable fat, which can be separated either by pressure or by trituration with water, it may possibly become valuable as an oil-producer; but, as we have no information in regard to the quality and properties of this oil, we can give no information in regard to its value.

Editor's Repository.

OUR SECOND VOLUME.—The *California Culturist* having passed from an experiment to an established success, we do not find a necessity of crowding it upon its former patrons, by continuing to send to those whose subscriptions end with the first volume, and who have not renewed, or do not wish to continue with us. We should be pleased to have the few who have not yet remitted for the second volume, do so if they intend to, with as little delay as possible, that we may arrange for the printing of the requisite number of copies. We intend to increase the interest and value of the *Culturist* to its patrons, from month to month, by the publication of a largely increasing and varied correspondence, which we have made arrangements for, from intelligent agriculturists in parts of the State remote from each other.

The *Culturist* will never be the organ or exponent of any particular society or class of men, other than appertains to the general interests of the farmer, gardener, miner and mechanic; and, in our advocacy of any particular doctrine or practices, we shall always regard the interests of the masses as paramount to any other consideration. So that as regards the nursery tree, the orchard, the vineyard or field crop of whatever description, we shall publish what we believe to be the best modes of culture and management; and, though our views may not coincide with those of all, our pages are ever open to the arguments and opinions of others, courteously expressed.

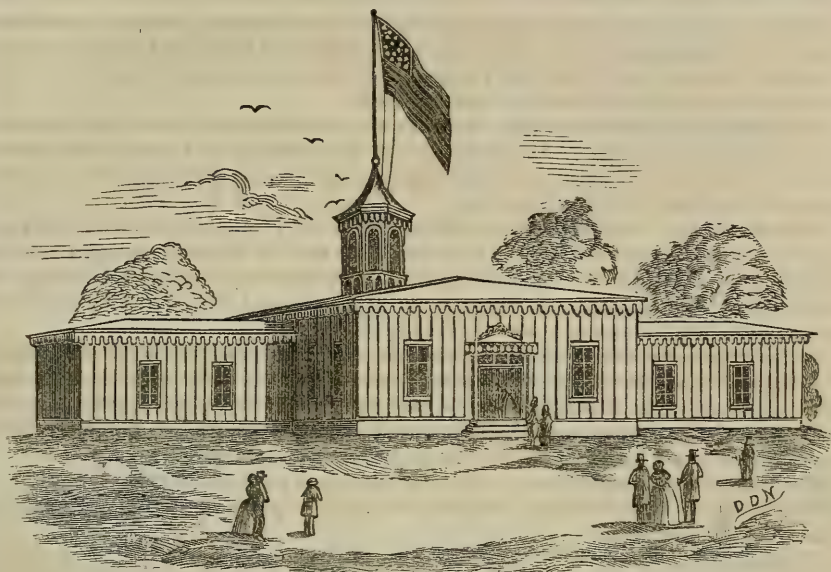
We believe this, the first number of the second volume of the *Culturist*, will please our patrons, and we intend that each succeeding number shall be superior to the last. We hope, therefore, to receive early assurances of the continued approbation of all our former patrons, and a favorable appreciation of our efforts, shown in large accessions of new ones. Remittances can be made by registered letters, at our risk.

OUR FRONTISPIECE.—Conspicuous among the many beautiful specimens of the cherry exhibited at the recent fair of the Alameda County Agricultural Society, was a cluster of the Mayduke variety, of which we present a true copy, so far as regards the size and outline of the fruit, but omitting many of the leaves. There were forty-two cherries in the bunch, growing so compactly together that they more nearly resembled a cluster of grapes than cherries.

They were the product of a tree in the grounds of Dr. H. Haile, of Alameda, whose skill in the production of many of the finer fruits has been frequently brought to our notice, by the inimitable grace with which they have adorned our editorial table.

The Mayduke is among our earliest and best cherries; an exceedingly profuse bearer, and should be found in every choice collection of this truly estimable early fruit. Our drawing was made by Mr. D. D. Neal, and the engraving executed by Mr. T. C. Boyd, of San Francisco.

CALIFORNIA SEEDLING APPLE.—Specimens of a seedling apple of last summer's growth were exhibited at the recent fair, by Mr. H. C. Smith, of Alvarado, that as a late keeping variety promises to be an acquisition to the list of fine fruits. It is an apple of medium size, a light russet color, smooth and regular in outline, and of a fine subacid flavor, tender and juicy, and does not wilt in keeping. It deserves a place upon the trial list of the finer late keeping varieties.



VIEW OF THE ALAMEDA COUNTY AGRICULTURAL SOCIETY'S PAVILION.

THIS beautiful pavilion, erected by the Alameda County Agricultural Society, for accommodating its annual or semi-annual fairs, is located upon the Plaza, but three or four blocks from the steamboat landing in Oakland. It is a permanent structure, and in its architectural design, finish, and adaptability to the purposes intended, highly creditable to its originators. The main body of the pavilion is forty feet in width and eighty feet in length, with wings each thirty feet in length by twenty in width.

It is the first permanent pavilion ever erected in the State exclusively for an Agricultural Society's purposes, by a County Society or any other. Projected by California's earliest pomological pioneer, A. H. Myers, Esq., of Alameda, and the President of the Society, it stands proudly forth as the pioneer agricultural pavilion of the Pacific coast.

THE LATE FAIR.

From the 14th to the 18th ult. inclusive, at Oakland, was held the first fair of the Alameda County Agricultural Society. It was styled a Floral Fair, believing that at so early a season in the year, the exhibit of beautiful flowers would be, in all probability, the main if not the most attractive feature of the fair. It was intended, however, that, so far as the fruits of the season could be made available, they would be brought in requisition to increase the interest of the exhibition.

The time set for holding the fair, owing to the present season being from three to four weeks later than ordinary seasons, was unpropitious for as perfect a display as might otherwise have been produced. It was just a little too late for the finest display of flowers, and a little too early for fruits; and yet, as a whole, exceedingly creditable to its projectors and contributors.

The most extensive contributor to the floral department, was Mr. James Hutchison. His splendid display of pot plants, cut flowers and bouquets, were the admiration of every one, and particularly his exhibit of superb roses in great variety.

To Mrs. Louis Bruguere the fair was indebted for an exquisite exhibit of rare and beautiful roses and other flowers. W. H. Bovee, Esq., also contributed largely to the floral decoration; but it is impossible for us to particularize and yet do justice to all, where all seemed determined to excell.

The exhibition of fruits, more particularly the strawberry, raspberry, gooseberry, currant and cherry, was exceedingly fine. No county can surpass Oakland, Alameda and vicinity in the production of berries and small fruits, and a better exhibit than was made upon the tables of the Oakland pavilion, we believe the world was never witness to.

Such clusters of large and beautiful cherries we never saw before, and believe they were never before equalled in any country. Our frontispiece, in this number of the *Culturist*, is but the clip from the end of a limb of a tree so heavily laden, in all its branches, that it was difficult to determine which was really the best among them.

Prominent among contributors were the following: Mr. B. F. Rynders exhibited—if it is possible to discriminate—perhaps the best specimens of the Gov. Wood cherry, though it would be difficult to say why they were in the least superior to those exhibited by Mr. John Lewelling. Of other varieties, Dr. H. Haile, A. H. Myers, R. W. Washburn and J. M. Horner were liberal contributors, and their fruits unsurpassed in size and flavor.

By far the largest number of varieties of the strawberry were exhibited by Mr. D. E. Hough, of Oakland, and among them, all the best esteemed varieties extant. G. W. Fountain exhibited superb specimens of the British Queen, and from the gardens of A. W. White, Esq. and Mr. Lusk were strawberries that cannot be surpassed in excellence. Our pages will not permit us further to particularize beyond that of giving the names of the persons to whom premiums were awarded.

The exhibition of sewing machines, by the representatives of the Grover & Baker and Wheeler & Wilson machines, and the beautiful work they are capable of performing, was as usual, a highly interesting feature of the fair.

The trial of reaping and mowing machines attracted quite a crowd interested in their performance. The result of the trial, considering the condition of the grain, was highly satisfactory. Not the least interesting feature attending the trial, was that of calling out the President of the Society and the editors of the two agricultural papers to take their turn at raking from the machines. The President led the way by a single round of the field; then followed the editor of the *Farmer*, and lastly the editor of the *Culturist*.

Our native modesty, of course, will prevent us from giving our real opinion as to who excelled; but in this one thing we are certain, having felt the most convincing evidence of the fact, that whilst the President and the older editor made but a single turn around the field, the editor of the *Culturist* was put three times round, or three to their one; for which privilege we were doubtless indebted to the quick perception of a sly wink given to the driver on every home stretch but the last.

Premiums Awarded.

PLANTS AND FLOWERS.

Largest collection pot plants, presented by James Hutchison, first premium. Best collection do., James Hutchison, second premium.

Best collection of roses, presented by James Hutchison, first premium. Twelve best roses, presented by Mrs. Bruguere, first premium. The choicest and rarest rose on exhibition, James Hutchison, first premium.

Best exhibit of cut flowers, W. H. Bovee, first premium. Second best, Mrs. Coggsall, second premium.

Best exhibit cut roses, James Hutchison, first premium. Second best, Mrs. Bruguere, second premium.

Best bouquet, James Hutchison.

Best vase bouquet, Mrs. Bruguere. Second best, Mrs. J. S. Potter.

CEREALS.

Wheat—Fourteen specimens of wheat were exhibited, consisting of six varieties.

Best exhibit, Capt. J. M. Moore, first premium. Second best, L. B. Huff, second premium.

Barley—Best, Capt. Coggsall, first premium. Second best, L. B. Huff, second premium.

Oats—Best, L. B. Huff, first premium. Second best, L. Dawson, second premium.
For exhibit of twenty-five varieties garden seeds, by D. L. Perkins, special premium.

FINE ARTS.

For landscape in oil, Miss M. A. Shattuck, first premium. Second best, Miss M. A. Shattuck, second premium.
Photographs—For best photographs, plain and colored, R. H. Vance.
For best daguerreotypes, to R. H. Vance.
For ambrotypes, the premium is awarded to Wm. Shew.
Water color painting, Mrs. H. H. Newcomb.
For cameo cutting, Mrs. V. E. Howard.

MISCELLANEOUS.

Butter—Mrs. E. J. Bardick, first premium. C. Appleton, second premium.
Cheese—Amos Hersley, first premium. Amos Hersley, second premium.
Bees—F. T. Houghton, first premium. C. Appleton, second premium.
Roofing—John Scott, Russell's mastick roofing, special premium.

FRUITS.

Raspberries—Largest collection, D. E. Hough, first premium. Second do., H. Luelling. Third do., A. W. White.
Currants—Best collection, R. W. Washburn, first premium. Second do., John Lewelling.
Currants—Best collection, A. W. White, first premium. Second do., John Lewelling, second premium.
Strawberries—Largest collection, D. E. Hough, first premium. Second best, choice varieties, D. E. Hough, second premium. Best specimens, G. W. Fouatain, premium.
Figs—Best exhibit, Mrs. Bruguere, first premium.
Gooseberries—Best collection, R. W. Washburn, first premium. Second best, D. E. Hough second premium.
Plums—Largest variety, J. G. Witcher, first premium. Second largest, A. W. White, second premium. Third largest, R. E. Cole, third premium.
Apricots—Largest variety, B. F. Rynders, first premium. Second largest variety, Miss Harriet Ladreau, second premium.
Apples—Mrs. Bruguere, first premium. Robert Blacow, last year's apples, second premium.
Peaches—Dr. R. E. Cole, premium.
Oranges—A fine exhibit of Oranges by Mrs. Bruguere, special premium.

NEEDLE WORK.

Knit bed quilt, exhibited by Miss F. Warner, first premium. Knit tidy, Mrs. Smith, second Premium.
Crotchet Shawl, Miss Nettie Marshal, first premium.
Worsted crotchet tidy, Miss J. Abbot, second premium.
Best needle work, Miss Harriet Landreau, first premium. Second best, Miss Sarah K. Adams, second premium.
Best quilt, Miss N. J. Moore, first premium. Second best, Miss Joanna Farrel, second premium.
Best embroidered table cover, raised work, by Mrs. L. B. Huff, first premium. Second best, Mrs. S. Pixley, second premium.
Best laid work, Mrs. J. B. Gogonan, first premium. Second best, Mrs. P. W. Van Winkle, second premium.

REAPERS AND MOWERS.

Best reapers and mowers, Thomas Ogg Shaw's newly invented California combined reaper and mower, first premium.

Reapers—Best reaper, the Morgan machine, entered by John H. Voorhies, first premium.

BREAD.

Only one sample entered in time to come under the rules of the Society, by Miss N. J. Moore, first premium.

Five samples submitted too late for competition, of which the Committee recommend a special premium to Mrs. Frank F. Fargo.

We believe the complete success that has attended this first experiment of the Alameda County Agricultural Society, to bring out and establish a creditable precedent for semi-annual fairs, that shall show off the fruits and flowers of spring, in their season, as well as the more enduring fruits of autumn in their season, can be followed by other counties in the State, with the greatest advantage to their horticultural interests.

HORTICULTURAL MEETING IN SONOMA.—Pursuant to call, a meeting of the citizens of the adjoining counties of Sonoma and Napa, was held at Oakes' Hotel. The object being for the formation of a Horticultural Society, not for the purposes of exhibition, but for importing, acclimating, and distribution of foreign rare seeds, plants and fruits. The meeting was addressed by Dr. Hill, of Sonoma, the chairman, Col. Haraszthy, of Sonoma, and Mr. Osborn, of Napa, in furtherance of the objects of the association. It appears that many choice plants, seeds and cuttings, that have, from time to time, been sent to our State, from having arrived out of season, and from want of knowledge of their proper treatment, have been of little benefit to individuals, and none to the State. The liberal distributions of the Patent Office, from the uncertainty and delay necessarily attendant in their transmission and receipt at so great a distant from Washington, is often the cause of disappointment, from the loss of vitality before reaching their destination. These inconveniences it is intended to obviate by the establishment of a garden, under the charge of competent persons, to which such acquisitions may be directed, and when successful propagation and examination have tested their value, to be distributed among the members of the association, the overplus sold in part payment of the expenses. Committees were appointed to canvass the two counties for stockholders, and to receive proposals from the different county towns as to location. Our citizens have become alive to the value of our soil and climate as a vine and fruit producing country. The product of the vineyards of Sonoma, and orchards of Napa, in the last few years, having been second to none in certainty of production of crops of superior quality.—*Alta*.

SONOMA AND NAPA HORTICULTURAL SOCIETY.—At a meeting of the citizens of Sonoma county, convened pursuant to notice, Dr. J. H. Hill was appointed Chairman and Wm. M. Boggs Secretary. The Chairman explained the object of the meeting to be the formation of a Horticultural Society upon the plan suggested by Col. Harazthy.

The meeting was then addressed by Col. Harazthy and J. W. Osborn, of Napa, showing in a very able manner, the advantages arising from such institutions. After which the following resolutions were adopted :

Resolved, That the Society be called the Sonoma and Napa Horticultural Society.

Resolved, That the stock of the Company be limited to five hundred shares, of ten dollars each, and that no person shall subscribe for more than twenty-five shares.

Resolved, That a Committee, consisting of seven, be appointed by the Chairman of this meeting to open books and receive subscriptions for shares in the Sonoma and Napa Horticultural Society, to be upon the plan and organized for the purposes, as presented by Col. Harazthy ; that the Chairman of said Committee be and is hereby empowered and requested, whenever a majority of the shares have been taken, to call a meeting of the stockholders of said association, to be held at some convenient place in the county in which the most of the stock has been subscribed ; at which meeting a constitution and by-laws shall be adopted, permanent officers elected, and such other business transacted as may be necessary, and that said committee be instructed to invite propositions from towns and individuals in either and both of said counties for its permanent location to be presented and submitted at said meeting.

The Chair then appointed Wm. M. Boggs, S. B. Bright, Fred Rohrer and M. Ryan, of Sonoma, and Wm. Baldrige, Esq., Wm. H. James and G. N. Cornwell, of Napa, said committee.

Resolved, That a copy of the proceedings of this meeting be forwarded to the papers of Sonoma and Napa counties, the *Culturist* and *Farmer* for publication.

Wm. M. Boggs, Secretary. J. H. HILL, Chairman.

NAPA AND SONOMA HORTICULTURE.—We last week published the preliminary arrangements made in regard to the formation of a Horticultural Society, and think our citizens should not too lightly view the invitation given them by the citizens of Sonoma to join in so laudable an effort. The successful example of an intelligent vine-grower in that county, and his practical analysis of the chemical properties of their soil, as shown in the production of many choice and highly flavored wines, has given an impetus to vineyard planting in that county, which will, in a few years, make that product of greater relative importance than that of the cereal crop, and has already given a high value to lands heretofore esteemed worthless in comparison with the richer lands in that and other counties. Napa, in its length and breadth possesses an area of land of similar quality, almost equal in extent with its fertile lands, at present but little sought for, and comparatively valueless, but capable of producing untold wealth in wines, and of giving employment to a large and permanent population; and as the over production of grain already points to a time when other avenues of agricultural industry must be sought, we commend this suggestion to the serious attention of our citizens. Improved culture has shown irrigation is not so necessary to the highly flavored grapes as some years since was thought; and for such necessity as exists of artificial supply of water, combined labor would soon dam our rocky canons into lakes, giving birth to thousands of new unseen springs in less elevated ground.

Such a Society as above mentioned, under proper auspices, would form the nucleus from which practical intelligence and information would radiate among our people, the rigid test of fruits and cuttings in its gardens, coupled with their necessary liberal distribution, would avoid all loss of time and disappointment to the vineyard and orchard culturist in the successful growth and introduction of choice varieties of vines and fruits not yet acclimated. If we understand rightly, all acquisitions received by the Society from our national or foreign gardens will be, if possible, successfully propagated and tested—then distributed among the shareholders of the Association, and the remainder sold to the general public in part payment of the expenses of the undertaking. The establishment of such a Society on a firm basis, at this early date in California history, would give character abroad to our horticulture which would bring fruits in contributions from kindred societies throughout the world; and we hope our citizens will not be backward in ensuring to Napa these resultant benefits.—*Napa County Reporter*.

AWAY UP IN SISKIYOU—Californians everywhere are awaking to the great interests of agriculture, mechanism and mining. In all parts of our State, societies are forming to promote, by a concentration of effort, the advancement of these our three leading interests. Send on your circulars, we have room for them all.

YREKA, SISKIYOU COUNTY, June 15th, 1859.

W. WADSWORTH, *Secretary State Horticultural Society*, SIR:—A meeting was held on the 11th inst., at the Court House in this town, in compliance with a previous notice, for the purpose of organizing a County Agricultural, Mechanical and Mineral Association, whereupon a temporary organization was effected by the election of Dr. I. H. Harris as President; Wm. Shores and Wm. S. Moses as Vice Presidents; Ed. Shearer as Secretary; E. K. Phipps, as Treasurer; and Frank Ensign (your correspondent) as Corresponding Secretary.

The object of those interested in organizing the association is to institute a society to aid in the development of the agricultural lands, and mechanical and mining interests of our large and populous county. We are far behind many of our sister counties in associated effort of this character, and we hope to emulate them by creating a society which will not only encourage the development of the industrial resources of our own county, but will zealously co-operate with similar societies in

our sister counties to promote the material interests of the whole State. The enterprise with us is yet in its infancy, and we will feel very grateful to all who will render us assistance, either by giving us advice, or by sending us statistics or other information bearing upon the interests we wish to encourage. If you will be so kind as to favor us with any reports, copies of proceedings of State or County Societies, addresses, constitutions and by-laws of agricultural, mechanical or quartz mining companies or societies, periodicals or documentary information of any description whatsoever, relating to the objects of our association, you will be entitled to our thanks, and we will be happy to reciprocate your kindness by the zeal we shall manifest in the work of aiding the industrial interests of our State. We have, as yet, effected but a temporary organization, and we expect to encounter the difficulties usually in the way of all useful enterprises at their first inception. But we hope eventually to place our society on a solid footing, and make it useful to all classes of our citizens. With us it is a labor of love, as well as of duty, and we mean to work with tireless energy until we see our little enterprise enlarged to the proportions of a useful and effective member of the sisterhood of societies, which are doing so much to promote the wealth and prosperity of our beloved State.

Yours, respectfully,

FRANK ENSIGN, Corresponding Secretary,

Please direct any correspondence to FRANK ENSIGN, Yreka Post Office, Siskiyou county, Cal.

WINTER IN NEW ENGLAND.—Our California readers cannot but peruse with interest the following note upon the climate of New England, as furnished us by a gentleman of intelligence and observation; Mr. Wm. Bacon, of Richmond, Mass., whose pen has more than once been wielded with marked effect in the *Culturist*, upon the subject of pear culture and the tap-root question.

Farmers of California; New Englanders thrive and prosper, with their farms one-third of the year under the snow! What then may you not do, with your *ever verdant* fields of hill and valley?

"Our last New England winter, though long was, as a whole, a mild one. The pleasant days of autumn held on until November, when it began to grow cold with storms. This cold increased until the 13th, when snow fell enough to cover the ground, at the time but slightly frozen; sleighing commenced the 20th, with just a good supply of snow, and continued fine—unusually fine by freedom of drifts—until March 20th, making a third of a year of good sleighing.

There were frequent thaws through the winter, so that the supply of water was kept abundant. After these thaws a snow usually fell, just deep enough to keep the sleighing fine.

The cold period of the winter was in January; the 7th of the month and until noon the 8th, was a heavy thaw. At 11, A. M., of the 8th, the wind changed north west, the clouds passed off, and, by 3 o'clock P. M., the cold was intense. On the morning of the 9th, the mercury was below 0; but was above during the day, falling below again at sun down. January 11th, at 7 A. M., mercury twenty-two degrees below 0; at 2 P. M., sixteen degrees below 0; at 9 P. M., nineteen below. We have before had as intense cold, but never within our knowledge has the mercury been so long below at one period. Such transitions from heat to cold are very trying to men, beasts and plants.

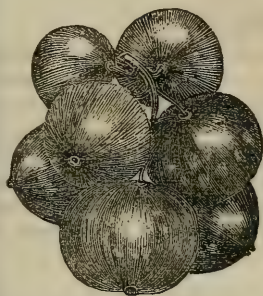
February was mild and the body of snow increased, so that March 1st, it lay heavy in the woods. The temperature was not remarkable in any way; March was a rough month, full of high winds and scowling clouds, snow-squalls and mud. April, too, has been petulant; clouds, heavy rains pouting showers, high winds, and a few warm days. Hay and grain have been high, but grass starts well; winter grain looks fine and, as far as we can judge, a season of promise is before us.

PHENOMENA.—Here in old Berkshire, the ground was covered with a good body of snow; much of it fell in November, when the ground was very slightly frozen in the fields and less in swamps and woods. It was a remarkable feature that the buds on the trees expanded over this coat of snow, the alder blossoms and the buds of the swamp willow expanding nearly to bursting. Latent heat must have been the cause; does a tree in a deep soil, with a healthful tap-root derive any additional benefit from latent heat? Is such a tree any more or any less subject to atmospheric changes than one with mutilated, feeble branching roots? Let anti tap-root philosophy answer.

Yours truly,

NEW ENGLAND, May 10th, 1859.

WM. BACON.



CHERRY CURRANT.

its individual berries, as found among the specimens presented us by Mr. White. As a variety it deserves extensive cultivation.

WE are indebted to Mr. A. W. White, of White's garden, Oakland, for a box of splendid specimens of the cherry currant, and certainly superior in point of size and flavor to any we have seen before. In the first number of the first volume of the *Culturist*, we gave an engraving of the Red Dutch currant, exhibiting the true size of that old and highly esteemed variety. But, however long and well it may have retained rank as the best currant of our catalogues, it must yield the palm to the cherry currant. This variety is easily distinguished from other red varieties by the shape of the bunches and the more uniform size of the berries. It is seldom we find a bunch of more than eight berries, and very often with but two or three.

The engraving herewith, shows the exact size of a bunch and

FRUIT FAVORS.—Who would not be an agricultural editor? June 24th, 1859, is made memorable with us as the day of the reception of a box of most superb raspberries, and the finest specimens of the British Queen strawberries that we were ever presented with. The donor, Mr. W. F. Boardman, of Oakland. May his berries never be less.

FRUIT SALES.—Do our agricultural and horticultural friends desire to know to whom they can confidently consign their products for city sale; we say emphatically, to J. Bryant Hill & Co., No. 63 Merchant street, opposite Washington market.

MONTHLY JOURNAL OF CALIFORNIA STATE AGRICULTURAL SOCIETY.—Number two of this serial was duly received. We can hardly conceive how a more fitting publication can well emanate from the office of a Corresponding Secretary of a State Agricultural Society than the little monthly messenger to which we allude. Replete with short practical articles of the highest interest to the California agriculturist, it contains also a list of articles contributed to the library and cabinet of the State Agricultural Society, and the names of the donors. As a means of disseminating information of the progress of agriculture, throughout the State, at an exceedingly cheap rate, it being wholly gratuitous, it can have no substitute.

STATE FAIR—MILITARY ENCAMPMENT.—We learn there is to be a general encampment of the entire of the military of the State at Sacramento, during the time of holding the State Fair. The main camping ground, however, to be on the Yolo side of the river, opposite to Sacramento. Thus at the same time and together, will be exhibited the strong arm of our State's support as well as defense.

This feature will call out vast numbers, in addition to the throng that always attends the annual holding of the State's agricultural fairs.

THE CROPS IN NAPA VALLEY.—Our Valley promises this year a fair average crop, which however, will not mature as early as that of last season. While the selection and soaking of the seed has secured the crop against smut—the early date at which most of it was covered has given a larger mixture of wild oats and volunteer than usual. We have not before seen in the valley so vigorous an attack upon the weeds which gradually creep into all cultivated fields, and many hands are now employed in the grain fields making a thorough riddance of these farmers' pests. Haying has very generally commenced, and so far as we are informed the hay grounds give far more luxuriant crops than have been made the previous two years. In fruits, while the peaches have been thinned by the frosts, other fruits have escaped, and there is general expectation of an excellent yield.—*Napa County Reporter*.

METEOROLOGICAL TABLE,

For Sacramento, California; being an abstract of Observations made during the month ending May 30th, 1859; Lat. 38°, 34', 41'', N.; Long. 121°, 27', 41'', W. Height of the lower surface of the mercury, 41 feet above the sea at San Francisco. The observations are made three times a day conformably with the hours adopted by the Smithsonian Institution. The indications of the barometer are given corrected for capillary action, and reduced to the temperature of 32° Fahrenheit, but not corrected for its height above the sea level. The rainy days are included under the head of cloudy and foggy, and are also put separately to show the number of days on which rain fell during the month. The force of the wind is estimated and registered in figures from 0 calm to 10 a hurricane.

By THOS. M. LOGAN, M. D.

MAY, 1859.	7h. A. M.	2h. P. M.	9h. P. M.	MONTH.	AVERAGE OF SEVEN YRS.
Barometer, Maxima	30.171	30.154	30.141	30.171 inches.	+ 0.004 inch.
“ Minima	29.744	29.769	29.778	29.744 “	+ 0.010 “
“ Mean	29.992	29.973	29.962	29.976 “	— 0.003 “
Thermometer, Maxima	68.00	80.00	72.00	80.00 deg.	— 0.80 deg.
“ Minima	51.00	53.00	53.00	53.00 “	+ 0.47 “
“ Mean	59.23	67.77	62.10	63.03 “	— 1.01 “
Force of Vapor, Maxima .....	.433	.522	.496	.522 inches.	+ .006 inch.
“ Minima .....	.193	.136	.216	.136 “	— .041 “
“ Mean .....	.340	.374	.373	.363 “	— .003 “
Relative Humidity, Maxima	82.00	80.00	81.00	82.00 per ct.	— 2.10 p. ct.
“ Minima	34.00	19.00	37.00	19.00 “	— 9.45 “
“ Mean	68.87	56.97	68.61	64.81 “	— 0.69 “
Number of Clear Days	12	14	18	14 2-3 days.	— 2 1-3 days.
Number of Cloudy and Foggy Days	19	17	13	16 1-3 “	+ 2 1-3 “
Number of Rainy Days .....	.....	.....	.....	4. “	— 1-3 “
Quantity of Clouds	2.9	2.1	1.6	2.2	— 0.4
Quantity of Rain and Fog .....	.....	.....	.....	1.037 inch.	+ 0.314 inch.
1st Days and 2d, Force of N. Wind..	5 4.0	6 2.9	7 1.7	6 2.9	+ 2 2-3 + 0.6
“ “ N. E. Wind.	3 1.3	1 2.0	0 0.0	1 1-3 1.1	+ 0 — 0.4
“ “ E. Wind....	1 2.0	1 3.0	0 0.0	0 2-3 1.7	+ 0 + 0.8
“ “ S. E. Wind....	10 2.3	0 0.0	2 3.0	4 1.8	— 1 — 0.1
“ “ S. Wind....	9 2.9	8 3.0	11 1.9	9 1-3 2.6	+ 2 1-3 + 0.2
“ “ S. W. Wind.	1 2.0	4 3.0	6 2.0	3 2-3 2.3	— 3 — 0.0
“ “ W. Wind....	0 0.0	4 2.8	3 1.7	2 1-3 1.5	+ 1-3 + 0.2
“ “ N. W. Wind.	2 4.0	7 2.9	2 1.0	3 2-3 2.6	— 1 1-3 + 0.2

Thermometrograph.

	DEG.		DEG.
Highest Reading by day on the 16th	84.00	Mean of all Highest Readings by day	69.64
Lowest Reading by night on the 3d.	45.00	Mean of all lowest readings by night	51.77
Range of Temperature during month	39.00	Mean daily range of Temperature during mo.	17.87

REMARKS.—The rigid and chilling weather which characterized the first third of the present year, has, at last, given way to the heat of a warmer season; and of late we have had a time, in our overflowed lands, of wading deep in melted snow; and now we are in an atmosphere of sultriness and haziness, of dryness and dustiness. It has been universally remarked all over the North American Continent, that the cold of the past season has been the most prolonged on record, and, in confirmation of this, the avalanche of water that has been precipitated from the mountains at this late date may be cited. On turning to our river chart we find that the spring floods, caused by the melted snow, invariably occur prior to the month of May, with the exception of last year; and even then the rise happened during the first week of May, and did not reach more than twelve feet, six inches above low water mark. This year the spring freshet did not attain its maximum until the 24th of May, when it marked nineteen feet above zero on the river gauge. Since this date the Sacramento river has been slowly subsiding, and now stands (1st June) at seventeen feet and eight inches above low water mark.

Whether or not the prolonged cold, damp weather will exercise a blighting influence upon the fruit crop, remains yet to be proved. As far as our information extends, the cereals have been damaged in only a few limited districts by the floods;—although we regret to hear that the smut has made its appearance in some localities. At the same time we are pleased to perceive that the berry crop, although a month behind the usual time, was never more abundant, and never more highly flavored. As it is probable the rainy season is now over, we annex the following summary, which will afford a comparative view of the amount of rain which has fallen:—1853-4, 20.069 inches; 1854-5, 18.620 inches; 1855-6, 13.770 inches; 1856-7, 10.443 inches; 1857-8, 15.003 inches; 1858-9, 16.021 inches.



LAWRENCE'S FAVORITE.

T H E

CALIFORNIA CULTURIST.

AUGUST, 1859.

REASONS FOR OUR OPINION.

IN the initiative of our first volume, we assumed the position that, in a country so new in all its general characteristics of soil, climate and productions as is the Pacific coast, there must, of necessity, be much variation from what has been regarded as the established theories and fixed laws of agriculture in other portions of the world; that a new system, to some extent, of cultivating and managing the soil and its growing products, seems almost indispensable.

By a few, our position has been assailed, and we have been reminded that we ought to know better than to advocate such doctrines; that the general principles applicable to a proper cultivation of the soil are alike in all countries, and that to attempt to introduce innovations merely because we are in a country new to civilization is assuming a little too much. We admit that, to all those who can see no difference in our climate and its effects upon vegetation from that which pertains to the Atlantic border or western Europe, our opinions seem innovations, and to all such slow-coaches, they doubtless really are. But to one who will carefully note the different effects of the same management upon soils in all other respects apparently similar, except that one is in a climate where it is subject to a perpetual succession of summer rains with heat, and in the other to perpetual sunshine and drought, the necessity of a new system of management must be apparent.

Thus we have before us at this moment a letter from an esteemed and highly intelligent fruit-grower and farmer, complaining that a heavy application of coarse manure, to a field fitted in every other respect admirably for Indian corn, will this year be the destruction of his crop. This would appear a strange assertion upon the Atlantic border, but not so here; and as our circulation is becoming largely increased

at the East, we will give the reason why coarse manures are here an injury to many crops, or to the land that produces them.

In the instance already alluded to, the injury has arisen simply from the plowing in, and covering deeply of a heavy application of manure late in the spring for the production of a corn crop; but how is this? why simply that the covering and partly mixing with the soil a large body of coarse manure at a single application has had the effect to cause the drying up of the entire surface soil above the main body of the manure as covered; and, as no rains can be hoped for till autumn, the manure remains wholly undecomposed, nor can there be much change in its adaptability to nurture a growing crop until rains or moisture and heat together shall favor a decomposition. We here have undeniable proof that, however well adapted to the corn crop at the East a heavy spring manuring may be, it is destruction to the same crop in California applied at the same season of the year.

Another letter before us declares that manuring in spring, with any substance that tends to lighten or render more loose and porous the soil occupied by the roots of plants is highly injurious, as tending to force the roots below the rich surface soil in search of that moisture of which they are deprived by the loosening and consequent drying up of the surface soil. With many it is becoming a question of importance as to whether manure should be applied at any season other than just previous to, or during the winter's rains; and also, as to whether such application should not be made upon the surface wholly, rather than deeply buried. It is also the opinion of many that only the concentrated fertilizers, as the phosphates, guano, etc., are best adapted to our circumstances of soil and climate.

There is another feature in our system of culture, the adaptability of which to our soil is questioned by many. We are not the stern opponents of a system that, from all time almost, has been deemed the true basis of all successful husbandry; but we must be allowed to question the propriety of a course of tillage, which, though with all the strength of ancient usage in support of it, is found to be at fault under new and, until recently, untried circumstances; we would refer to the system of deep and frequent plowing of the soil.

We may be very wise in the introduction of many new plans, appliances and systems or modes of culture, and doubtless we are; but with all these, the fact still stands out in strange contrast, that the native Californian, before the conquest or purchase, could and did, by just scratching over the surface soil with a crooked limb of a tree for a plow, raise more wheat to the acre and more free from smut, than we with all our agricultural science and deep plowing are doing.

The native Californian, with a stick lashed to the oxen's horns for a yoke and a stick for the plow, could easily raise seventy bushels of wheat to the acre, oftentimes more; but seldom less than fifty. Now, the American culturist is glad to average thirty, with all the aid supposed to be derived from a knowledge that deep plowing is the improved system upon which a successful husbandry must be based. We shall extend our observations upon this subject in subsequent numbers.

ART, SCIENCE AND INVENTIONS.

DISTRIBUTION OF EARTHQUAKES.—An interesting map has been prepared under the auspices of the British Government, for the advancement of science, with a view illustrating the surface distribution of earthquakes, the position and situation of all volcanoes, fumaroles and solfaturas, now active or presumed to have been so, within historic or recent geologic periods, as well as the earthquake bands in position and relative intensity. The area of supposed land and sub-oceanic subsidences are also indicated. The map conveys at a glance the portions of the globe in which volcanic eruptions are most prevalent. Those appear, by contrast, to be the islands and oceans surrounding Borneo, where alone are given upwards of one hundred indications, the Gulf of Mexico, and the Andes of South America. In the northern regions, Iceland alone stands out in marked prominence, whilst the whole of Africa, with the exception of the Cape and the northern boundary, and the continent of South America east of the Andes, appear to be totally unaffected by the laws of earthquakes. The greatest area of subsidence appears to be in the Pacific ocean, extending in a direction southeast from the Philippine Islands to Pitcairn's Island.

PECULIAR CHEMICAL PROPERTIES OF GOLD.—When gold is fed into a vessel containing "agua regia"—nitro muriatic acid—which contains free chlorine in the nascent state, it is dissolved, and a per-chloride of gold formed, which is a red, deliquescent, crystalline compound, soluble in water, ether, and alcohol, and is decomposed by light and heat. When proto-chloride of tin is added to a solution of per-chloride of gold, a fine purple precipitate is formed, which is used in porcelain painting, and for tinging glass a red color. Gold dissolved in nitro muriatic acid can be precipitated by adding to it a solution of the proto sulphate of iron. The gold subsides to the bottom of the vessel containing the solution, and forms a brown powder, which, after being washed in hot water, then digested in hot dilute muriatic acid, is again washed, and forms the pure gold employed in gilding china or porcelain ware. It is intimately commingled with honey and a little borax, as a vehicle; is painted on the ware with a pencil, burned in a kiln, then burnished afterwards. Great care is exercised in mixing the gold powder, so as not to press it too hard, as this readily brings it into its metallic state again.

HOT-AIR ENGINES.—A great drawback to the use of heated air, according to M. Prieux, is the small amount of its expansion. Water is found to expand one thousand, seven hundred and twenty-eight times; so that to obtain a volume of expansion of one cubic foot, it is necessary to force into the reservoir where the expansion is effected—the boiler—a volume of one cubic inch. Could air be obtained in any similar condensed and manageable form, yet retaining its present small capacity for heat, it would stand on a totally different footing from that which it actually occupies. Even at five hundred and sixty-eight degrees, however—which is probably above the temperature at which it could be practically used with advantage in a cyl-

inder with air-tight piston—its volume, at sixty degrees, is only doubled; consequently, for every volume of heated and expanded air which develops power as it escapes by the working cylinder, half a volume of the cold air must be forced into the reservoir where the heating and expansion are accomplished by the supply cylinder—an operation which at once consumes half the theoretic power of the engine plus the friction of the supply cylinder with its valves and appendages, and increases its consumption of heat for duty done to considerably more than double, as compared with the steam engine.

THE IMPROVED MUSKET.—The improved rifle musket, now manufactured for our government, has a barrel forty inches in length, with a caliber fifty-eight hundredths of an inch in diameter, and is rifled with three grooves which describe a circle in six feet; the grooves and bands being equal, that is, the grooves one-half the interior surface of the barrel. The ball is elongated, pointed at one end, with a cavity in the other to permit the action of the powder to expand it sufficiently to fill the grooves and prevent the escape or loss of its force. The ball weighs about five hundred grains, and is what is generally termed the Minie ball, although differing somewhat from that. The lock has the "Maynard primer" attached to it, which will receive a coil of fifty primers on a strip, one of which is exploded each time by the action of the hammer. The form of the butt plate and bayonet is much improved from the old musket. The ramrod, also, has a cavity in the head to fit the point of the ball, to prevent bruising it in ramming down, and a swell in the body about six inches from the end for the hand, and also to hold it firmly in the stock, in place of the rod-spring on the old musket.

INSTINCT vs. INTELLIGENCE.—A recent discussion, by a French author, as to whether some insects do not possess intelligence as well as instinct, is noticed in the last number of Blackwood. The French naturalist decides in the affirmative, and gives some interesting examples in support of this position, obtained by observing the habits of ants. We can quote but one paragraph.

In the construction of their galleries, wonderful as that is, most persons see nothing but instinct. Huber observed, however, that if even an engineering mistake was committed—when one wall was raised higher than another—one of the ants would destroy the whole, and rebuild it again correctly. It is their conduct towards the aphides, however, that most amusingly illustrates their intelligence. The little green insects, mostly wingless, found on the leaves and in the calyx of the rose, in great numbers, throughout the summer, secrete on the surface of their bodies a sugary fluid, of which the ants are as fond as gourmands are of turtle. Not only do the ants find where the aphides "most do congregate," and there wheedle them out of their sugar by the most flattering attentions, (a stupid animal would kill such a food-bearing stranger, and thus kill the goose that laid the golden eggs,) but, although these attentions are successful, the ants—thoughtful creatures—do not trust alone to the chance of finding aphides; they rear them! The ants take the eggs of these aphides into

their own nests, rear them with maternal solicitude, and transport them in all their migrations. Not only do they rear them, but they have frequent battles with rival tribes, on their account; the possession of these eggs is the trophy of conquest.

FRUIT PIES.—The acid in fruit pies may be neutralized by adding to each as much carbonate of soda as will cover a twenty-five cent piece. This simple precaution, which does not affect the flavor of the fruit, will prevent much sickness, and save much sugar, otherwise needed to render the sour sweet.

USEFUL MEDICAL HINTS.—If a person swallow any poison whatever, or has fallen into convulsions from having overloaded the stomach, an instantaneous remedy, more efficient and applicable in a large number of cases than any half-a-dozen medicines we can now think of, is a teaspoonful of common salt and as much ground mustard, stirred rapidly in a teacup of water, warm or cold, and swallowed instantly. It is scarcely down before it begins to come up, bringing with it the remaining contents of the stomach; and lest there be any remnant of poison, however small, let the white of an egg, or a teacupful of strong coffee be swallowed as soon as the stomach is quiet; because these very common articles nullify a larger number of virulent poisons than any medicines in the shops. In cases of scalding or burning the body, immersing the part in cold water gives entire relief as instantaneously as lighting. Meanwhile get some common dry flour, and apply it an inch or two thick on the injured part the moment it emerges from the water, and keep on sprinkling the flour through anything like a pepper box cover, so as to put it on evenly. Do nothing else, drink nothing but water, eat nothing until improvement commences, except some dry bread softened in very weak tea of some kind. Cures of frightful burnings have been performed in this way, as wonderful as they are painless. We once saved the life of an infant which had been inadvertently drugged with laudanum, and which was fast sinking into the sleep which has no awaking, by giving it strong coffee, cleared with the white of an egg, a teaspoonful every five minutes until it ceased to seem drowsy.—*Medical Journal*.

CURE FOR HYDROPHOBIA.—A correspondent of the *Providence Journal* recommends asparagus as a cure for hydrophobia in any stage of canine madness. The directions are: "Eat the green shoots of asparagus raw, sleep and perspiration will be induced, and the disease can thus be cured." This remedy proved effectual to a man in Greece after the paroxysms had commenced.

A CATALOGUE OF MARVELS.—From a report of the Patent Office, the Washington *Cotton Plant* compiles a list of wonders:

The report explains the principle of the celebrated Hobbs Lock. The "unpickability" depends upon a secondary or false set of tumblers, which prevent instruments used in picking from reaching the real ones. Moreover, the lock is powder proof, and may be loaded through the hole and fired off until the burglar is tired of his

fruitless work, or fears that the report of his explosions will bring to view his experiments more witnesses than he desires.

Doors and shutters have been patented that cannot be broken through with either pick or sledge hammer. The burglar's "occupation's gone."

A harpoon is described which makes the whale kill himself. The more he pulls the line, the deeper goes the harpoon.

An ice-making machine has been patented, which is worked by a steam engine. In an experimental trial, it froze several bottles of sherry and produced blocks of ice the size of a cubic foot, when the thermometer was up to eighty degrees. It is calculated that for every ton of coal put into the furnace it will make a ton of ice.

From Dr. Gale's Examiner's report, we gather some idea of the value of patents. A man who had made a slight improvement in straw cutters, took a model of his machine through the Western states, and after a tour of eight months, returned with forty thousand dollars. These are ordinary cases—while such inventions as the telegraph, the planing machine, and India rubber patents, are worth millions each.

Examiner Lane's report describes new electrical inventions. Among these is an electrical whaling apparatus, by which the whale is literally "shocked to death." Another is an electro-magnetic alarm, which rings bells and displays signals in case of fire and burglars. Another is an electric clock, which wakes you up, tells you what time it is, and lights a lamp for you at any hour you please.

There is a "sound gatherer," a sort of huge ear trumpet, to be placed in front of a locomotive, bringing to the engineer's ear all the noise ahead, perfectly distinct, notwithstanding the noise of the train.

There is an invention that picks up pins from a confused heap, turns them around with their heads up, and sticks them in paper in regular rows.

Another goes through the whole process of cigar-making, taking in leaves and turning out finished cigars.

One machine cuts cheese; another scours knives and forks; another rocks the cradle; and seven or eight take in washing and ironing.

There is a parlor chair patented that cannot be tipped back on two legs, and a railway chair that can be tipped back in any position without any legs at all.

Another patent is for a machine that counts passengers in an omnibus and takes their fares. When a very fat gentleman gets in, it counts two and charges double.

There are a variety of guns patented that load themselves; a fishing line that adjusts its own bait; and a rat trap that throws away the rat, and baits itself and stands in the corner for another.

The truths of the Patent Office are stranger than fiction.

There is a machine, also, by which a man prints instead of writing his thoughts. It is played like a piano-forte. And, speaking of pianos, it is estimated that nine thousand are made every year in the United States, giving constant employment to one thousand, nine hundred persons, and costing over two millions of dollars.

SALT.—The application of two to four hundred pounds of salt to the acre has

been found to be of great advantage in promoting the growth of all plants and trees, Warm soils of the inland districts, and especially those that have been dressed liberally with animal manure, are the most benefited. A dressing of salt upon a grass lawn will often increase growth and thicken up the plants far more than a coating of animal manure.

NUTRITIVE QUALITIES OF THE ONION.—The onion deserves notice as an article of great consumption in this country, and it rises in importance when we consider that in some countries, like Spain and Portugal, it forms one of the common and universal supports of life. It is interesting, therefore, to know that, in addition to the peculiar flavor which first recommends it, the onion is remarkably nutritious. According to analysis, the dried onion root contains from twenty-five to thirty per cent. of gluten. It ranks, in this respect, with the nutritious pea and the grain of the East. It is not merely as a relish, therefore, that the wayfaring Spaniard eats his onion with his humble crust of bread, as he sits by the refreshing spring; it is because experience has long proved that, like the cheese of the English laborer, it helps to sustain his strength also, and adds—beyond what its bulk would suggest—to the amount of nourishment which his simple meal supplies.

TOMATOES.—The following method of preparing tomatoes for the table, we are assured by one who has made the experiment, is superior to anything yet discovered for the preparation of that excellent vegetable:

Take good ripe tomatoes, cut them in slices, and sprinkle over them finely pulverized white sugar, then add claret wine sufficient to cover them. Tomatoes are sometimes prepared in this way with diluted vinegar, but the claret wine imparts to them a richer and more pleasant flavor, more nearly resembling the strawberry than anything else.

CLOVER.—Where clover can be mown more than once in a season, each time that it is cut, the roots penetrate to a greater depth in the soil and subsoil, in search of food; it is, therefore, evident that this plant does not receive all its support from the active soil, but a portion of it from a greater depth in the subsoil than most ordinary farm crops. Besides this, I have been led to believe, from experience and observation, that the roots of clover not only obtain a portion of their food from a greater depth in the earth than is penetrated by the plow, but that those roots in thus penetrating the subsoil in search of food, actually bring up something which in their decay strengthens and enriches the soil for future crops.—*Correspondent in Country Gentleman.*

ACTIVITY AMONG INVENTORS.—As an indication of the active development of genius among our countrymen, we would state that during the month of April, there were made through this office alone (exclusive of our branch-offices in Washington

and abroad,) *one hundred and fifty-seven* applications for patents in the United States, and *ten* in foreign countries.

Out of the number of patents issued from the United States Patent Office, during the same period, (April) one hundred and twenty-four of the cases were prepared and conducted through the Scientific American Patent Agency; thus showing, by figures, we are confident, not only that more applications for patents were made through this office during the above month than all the other agencies in the country combined, but also that there never were so many patents issued to the clients of one agency in the same period as were issued to our patrons last month.

It will also be observed that a very large proportion of the cases applied for (one hundred and twenty-four out of one hundred and fifty-seven) were granted; thus showing that inventors are not only exercising their genius, but securing legal title to its products, and that the majority of them apply to the best source to get their rights secured.—*Scientific American*.

LUNAR INFLUENCES.

ACCORDING to popular belief, the moon not only presides over human maladies, but, like comets, is made responsible for a vast variety of interferences upon the weather, as well as upon organized nature. The circulation of the juices of vegetables, the qualities of grain, the fate of the vintage, are all attributed to its influence; timber must be felled, the harvest reaped and gathered in, and the juice of the grape expressed at all times and under circumstances regulated by the aspects of our satellite, if excellence be hoped for in these products of the soil. If these opinions were limited to particular countries, they would be less entitled to serious consideration; but it is a curious fact that many of them prevail, and have prevailed in sections of the globe so distant and unconnected, that it is difficult to imagine the error to have proceeded from a single source. At all events, the extent of its prevalence alone rendered it fit subject for investigation by M. Arago, who demonstrated that, so far as actual observation has hitherto afforded grounds for reasoning, there is no discoverable correspondence between the lunar changes and the vicissitudes of rain and drought, which can justify, or in any degree countenance the popular belief so generally entertained.

The opinion that timber should only be felled during the decline of the moon, is acted upon with undoubted confidence in various countries, and is even made the ground of Legislation in France, with the belief that its increase causes the sap to ascend, and, if cut during the latter period, it will contain more sap, and will, therefore, be more spongy, more likely to be attacked by worms, more difficult to season, and more readily split and warped by changes of temperature. Hence, it would follow that the proper time for felling timber would be at new moon.—*Patent Office Report*.

But we believe in nothing of the kind; the moon can have no effect upon the

earth's surface beyond that of its light and its attractive power. The former is reflected from the sun, but comes to us without its heat, or with so little that its effect is unappreciable. The changes of the moon, so much harped upon by many, as affecting the growth of vegetation and the changes of the weather, are, in fact, all "moonshine," simply occasioned by the fact of our position as regards that part of the moon shone upon by the sun, and visible or invisible to us.

The attraction of gravitation, the only effect really felt by our planet, causing the diurnal air and water tides, is always the same, be it in the new or full of the moon, and for the very plain reason that the moon is always of the same size, shone upon at all times alike by the sun, except during the short intervals of eclipses. In any portion of the Atlantic, it is not unusual at times to have the moon totally obscured by cloudy weather during its entire increase and full; and yet who ever observed the least possible effect or change in the growth or even color of plants from the absence of its light?

If farmers would give more attention to the season of sowing, to securing good seed, putting their lands in better condition for the reception of it, and more care in the management and culture of their crops, they might "whistle at the moon," so far as its power to affect them either for good or evil is concerned. We would like to have some one tell us, if he can, what effect the changes of the moon have upon the unclouded sky of a six months' California summer.



ROOT-GRAFTED APPLE TREES.

MUCH has been said upon the subject of root-grafting, or the propagating of orchard trees by grafting upon sections of roots; some contending that a tree is a tree as perfect, in all its parts, when grown from a section of a root, as when grown from a seedling tree with its roots entire. Most nurserymen entertain the former opinion; not necessarily because the plan is essential to their success in the propagation of large numbers of trees, but because they really believe that such sections of roots are just as good for tree-growing as would be the entire root of a seedling.

There are those, however, even among nurserymen, who entertain the opposite opinion, and among this number we find an intelligent culturist, Mr. Wm. Reid, of Elizabeth, N. Y., who writes to the editor of the *Gardener's Monthly* as follows:

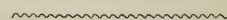
"I observe in the March number of the *Gardener's Monthly*, extracts from the proceedings of the Cincinnati Horticultural Society's discussions on root-grafting apples, in which, if I understand the purport of their discussions, they advocate the growing of the apple by grafting on sections of the root, to grafting or budding on seedling stocks in the nursery rows in the usual way.

Our esteemed friend, Dr. Warder, says that this question has been settled long ago, in this country and elsewhere.

This theory is so much at variance with our daily experience, that I cannot for a

moment doubt, that if a vigorous, strong-rooted tree is desirable in an orchard, those grafted or budded on seedling stocks, eight to ten inches above ground, are far superior to those propagated by grafting on pieces of the roots. We all know—what Dr. Warder admits—that they are nothing more than cuttings: the grafts rooting the first summer after planting, the only use of the piece of root being to keep the graft alive until it starts into growth. No doubt many of the strong, vigorous growing kinds make very good plants from cuttings, coming into bearing early; but still they lack the strong, vigorous root that a seedling produces. This has been long known to cultivators, that all kinds of plants, grown from seed, are far more vigorous than those from cuttings; resisting winds better, and not so liable to be blown down as those grown from cuttings, where their roots are bushy, and do not extend with that vigor that seedling stocks do.

We all know that the system of root-grafting is a cheap way of growing; enabling cultivators to increase plants with great rapidity; but this does not add anything to the value of this system of propagating except cheapness."



PEAR CULTURE.

FROM a communication of Thos. W. Field, of N. Y., to the editor of the *Gardener's Monthly*, we extract the following, as containing a few admirable hints in relation to the good or bad success of culturists with apparently the same causes of soil and climate, and an admonition to a concession of opinion that not a few writers in our own state would do well to consider.

"The communication from Mr. Bright is conceived in so kindly a spirit of criticism, and written with so much intelligence, that I cannot allow him to retain a misapprehension upon the subject, nor omit to confess that there are just grounds for his strictures upon the article on trenching and manuring in pear culture.

I have not hitherto noticed any of the critiques upon my *brochure*, for several reasons; principally, because I was heartily tired of writing upon the subject, but occasionally, because they were ill-natured, or written by those who had little interest in the subject. To Mr. Bright let me say, that he has given me the first misgivings upon the policy of what I had written, and that I confess his view to be the most philosophical regarding pear culture.

Still, I must do myself the justice to say that the great expense I recommended was qualified in several places in the book, by stating that it was the extreme of high cultivation, and that I felt it necessary to explain the processes by which the very highest result could be reached.

On those wretchedly light soils which it has been my fortune to cultivate, much less labor would scarcely secure success.

Pear cultivation is yet in its infancy, and certainly offers a range of experiments, and an extent of progress, which no other fruit possesses.

The apple has long since reached its ultimatum. The best varieties of apples have

been in existence for fifty or perhaps a hundred years—witness the Swaar, Newtown pippin and Spitzenberg—while few pomologists believe that we have anywhere near approached the perfection of the pear. It is evident, from all that has been said of this fruit, that the question of pear on quince stock, or on its own roots, is one of locality and culture.

My neighbor on the north, although a very skillful gardener, has never succeeded in raising cabbages; while my neighbor on the south is eminently successful in raising that rather fickle vegetable, but fails constantly in growing celery, which his comrade grows with great profit. Can either say with fairness, that it is impossible to raise the favorite plant of the other with profit?

Let us all make those concessions of our incapability which are so evident to all, without feeling our vanity so dreadfully wounded.

In summing up all the testimony and arguments in the case of pear *versus* failure and others, we must arrive at the following conclusions:

1st. The finer varieties of the pear will not endure, in their earlier years, all the neglect and ill-treatment which other fruits would survive.

2d. The pear on quince roots requires, for a few years, more assiduous care than on its own roots.

3d. Though the range of pear soils and climate is very large, yet not all of them are equally well fitted for it, and some prove decidedly hostile to the growth and fruiting of the tree.

4th. That the pear has proved as generally successful as any other fruit, and very far more so than the peach, cherry and grape."

GRAPES AND WINE, No. 2.

GRAPES differ materially in their constituents from most other fruits employed for making wine. The juice of the grape not only contains a larger proportion of saccharine matter than that of other fruits, and is consequently capable of producing a larger quantity of alcohol, making a stronger liquor; but it differs also in the nature of its acid, which is chiefly the tartaric, that being almost the only acidulous principle existing in it—particularly the mature grape, ripened in a dry and warm climate like California.

It is the abundance of this acid in the grape that causes its excellence as a material for wine. Other fruits employed for this purpose, as gooseberries, currants, elderberries, strawberries and cherries, contain chiefly the malic, citric and acetic acids, which are partly combined with potash, forming malate and citrate of potash, and partly in a free state; but these salts being soluble both in water and in alcohol, necessarily remain in the wine that has been prepared from the fruits, nor can they be separated; hence all the wines made from other fruits, except the grape, contain a quantity, generally considerable, of free acid, which is injurious to many constitutions; and as the acids are not generally palatable, they are usually concealed, by

the addition of large quantities of sugar, as we shall show when the processes of making these wines are described.

The tartaric acid, on the contrary, does not exist in the grape in a free state; but it is always combined with potash, constituting bitartrate of potash; and this is the substance known as tartar. This tartar is the most abundant in the juice of unripe grapes, called often verjuice, and has an austere taste; it lessens in quantity as the grape approaches maturity, when the sugar increases in the same proportion. The tartar is held constantly in solution in the grape juice; but as soon as the fermentation commences and alcohol is evolved, a portion of the tartar is precipitated, or thrown down in the solid form, because it cannot be kept in solution by alcohol; and the latter has diminished, to a certain degree, the solvent power of the must, or fermenting juice.

The precipitation of the tartar takes place upon the bottom and sides of the containing vessel, to which it adheres as a hard crust in a crystalline state, called the lees of wine. A small quantity of the tartrate of lime is also found united to it, and exists even in the purified tartar, or common cream of tartar; hence it follows that, if the grapes are of the best quality, containing tartar, they have but little or no free acids; and if the fermentation has been well conducted and complete, the resulting wine will be quite, or almost entirely free from acid of any kind; and it is this circumstance chiefly that renders the grape superior to every other fruit for producing a wholesome wine. But wine is never perfect until it has subsequently undergone the very slow fermentation which brings it to its highest point of perfection, when a still further quantity of the tartar subsides, and constitutes what is called the crust when bottled, the quantity of which usually gives an idea of the quality and age of the wine.

All grapes, however, are not entirely without other acids besides the tartaric; but they seldom contain any of these in considerable quantity, and in that case they are less fit for the production of good wine. Besides the essential principles of the grape, namely: sugar, tartar and natural ferment, it contains some mucilage, and an aromatic essential oil in minute quantity, to which the delicate perfume or aroma of the wine made from it is owing.

The vintage should never commence before the grapes have arrived at their full maturity, except in cold countries, where sometimes the season is so late before they ripen that there is danger of their being spoiled or injured by frosts; yet brisk wines can be made from immature grapes. In the manufacture of the best wines, care should be used to avoid the two extremes of gathering the grapes not sufficiently ripened, or so ripe that they begin to spoil. In warm countries, in the manufacture of sweet, luscious wines, the grapes are permitted to hang on the vines till they shrivel, or they are gathered and partly dried in the sun before the juice is expressed.

When the grapes are to be collected, a sufficient number of hands should be employed so as to be able in a single day to gather enough to fill the fermenting vat. The unripe or decayed fruit should be carefully separated, a matter which is too often neglected in the making of the inferior wines, or the fabrication of wine for

distilling into brandy. In making champagne or brisk wines, it is better to have a certain proportion of unripe fruit, for reasons that will be explained hereafter. For very rich, sweet wines, the juice is concentrated by leaving the grapes after being picked, exposed to the sun for a few days; but, in general, the fruit is taken at once to the press. In the richer and best wines also, where a very delicate flavor is expected, all the stalks or stems are removed; but in the strong, rough wines a certain proportion of the stalks are kept, as they impart a kind of strength and astringency. In the preparation of port wine they are always used; but in the manufacture of the more delicate wines they are generally excluded. The practice of wine-making in this respect differs; but in all weak wines the stalks if much broken are apt to communicate a harsh and austere flavor.

The bruising the fruit or pressing, is performed in various ways in different countries, according to the care bestowed in the manufacture. In many parts of France, the grapes are put into tubs with perforated bottoms, and men tread them with their *sabots*, or wooden shoes, the juice running out into the tub or vat placed below. This mode is imperfect, and where the vintage is conducted in the best manner, a variety of presses are made use of for this purpose, by which the process is performed more uniformly and completely. The skins, seeds and refuse, after the grapes have been pressed, constitute what is called the marc. But before we proceed to describe the manufacture of wine, we will explain the principles upon which its formation depends.

The theory and process of fermentation should be well understood, as a requisite to a connected view and proper knowledge of wine-making. When any sweet, vegetable juice is exposed to the ordinary temperature of summer, say from fifty to eighty degrees, it soon begins to exhibit that intestine motion termed fermentation, and distinguished by the production of alcohol, which remains in the liquid, and of carbonic acid, which chiefly escapes in the form of gas. If a decoction of malt is fermented, the produce is ale or beer; but if grapes or other sweet fruits are employed, wine is the result.

The process of fermentation depends essentially upon the presence of two substances at least; saccharine matter and another vegetable principle termed a leaven or ferment, the nature of which appears to be very nearly analogous to, if not identical with, gluten or vegetable albumen. These two substances, which exist more or less in all sweet vegetable juices, act upon each other, and occasion a decomposition into their elementary principles; and when these unite again in other proportions, they give rise to the two essential products of fermentation above mentioned, alcohol and carbonic acid. The phenomena of fermentation and the liquid resulting from it vary, in some degree, according to the relative proportions of the saccharine matter and the ferment.

When the juice of the grape or must, as it is termed, is put into the vat, at a temperature of sixty degrees, it soon begins to ferment spontaneously; no yeast is added, as in the case of beer or ale, because the natural ferment contained in grapes is sufficient to excite and keep up a sufficient fermentation. We may mention it as remarkable, that although expressed juice ferments so readily, yet the process never takes

place in the juice before the fruit is bruised. The fact is, the sugar and the ferment are contained in different parts of the grape, and they never come in contact except the fruit is broken.

The general phenomena of fermentation consists in the appearance of air-bubbles and an ebullition, more or less active, and a turbid state of the fluid; a portion of the exhausted ferment, rendered insoluble, rises to the surface with another portion not exhausted, constituting the yeast, the remainder falling to the bottom in the form of lees. The gas which escapes is known to be the carbonic acid.

In making wines there are two marked periods in their fermentation. The first, or primary fermentation in the vat is the most considerable, in which the principal part of the sugar and ferment are decomposed; and, of course, alcohol produced. After this first effort of the fermentive process, the usual phenomenon disappears or the effect is diminished; the process should now be stopped, otherwise the liquor would advance to the acetous fermentation and become vinegar. While this first fermentation is proceeding, yeast being thrown up, and tartar and mucilage precipitated, the liquid is more or less muddy; but as the fermentation lessens and these impurities have gradually subsided to the bottom as lees, the new fluid, or wine, becomes clearer, and the vinous taste perceivable. But though the operation of fermentation has apparently ceased, it has not in reality; and it must be continued longer before the wine becomes perfect. It is said that the fermentation is most perfect where large quantities of must are operated upon. When the weather is cold and the fermentation slow, it can be increased by the addition of starch sugar, which is of the same kind as that of the grape; but here, no such addition is required.

After the first fermentation has continued for a sufficient time, according to the kind of wine to be made, it is then racked off or transferred to casks, there to effect a slow fermentation, generally termed, not very correctly, the invisible fermentation; but care must be taken not to pour off the lees that have settled to the bottom, nor the yeast on the top. When first put into the casks, the wine still contains a portion of fermentable matter, which, though not sufficient to produce the very visible effects of ordinary fermentation, is yet sufficient to occasion a very slow state of this process, which continues a longer or shorter time, according to circumstances.

During this second fermentation in the casks, the wine becomes slightly turbid again, and there is some little motion in the fluid; yeast is thrown off by the bung, as the casks are kept always full that it may pass out upon foaming. This matter of keeping the casks full, however, depends upon the kind of wine to be made. When the fermentation in the casks has continued till the wine has thrown off its yeast, the bungs are driven in tight, and the wine left to deposit its tartar, which it does in consequence of an extremely slow fermentation, which often continues for a long time, during which the wine is ameliorated by a more intimate combination of the alcohol, and the further separation of the insoluble salt, the bitartrate of potash, called tartar, which subsides, adhering to and lining the bottom and sides of the cask as lees. As the taste of tartar is harsh and disagreeable, it is evident that the wine will be improved by being deprived of it, and hence old wine is preferable to new.

There is, however, sometimes a danger in putting the liquor into the casks before it has had sufficient time to ferment in the vat. If the unfermented matter is in too large a quantity, it will ferment violently in the casks and become badly turbid, and if put into bottles will probably break them. Again, if the fermentation has been carried too far, there is a chance of the liquid souring and turning to vinegar. A portion of the coloring matter, as well as tartar, is also precipitated, adhering to the sides of the cask; the wine is mellowed, and the aroma and flavor that are peculiar to it become more apparent. These changes are sometimes accelerated by various artificial means, especially by the agitation of the lees, which always contain a portion of the ferment, and by the assistance of artificial heat.

Hence the reason why certain strong and austere wines are so much improved by being exported in the lees to a warm climate, as is the case in carrying Madeira to the West Indies, or in subjecting it to the effect of local motion of any kind with heat, as is now practiced in the Island of Madeira. On the contrary, the lighter and more delicate wines are injured by the motion even of removal to any distance, and, therefore, can be drank in perfection only in the countries where they are grown.

To prevent a renewal or continuance of fermentation after a certain time, when most of the lees has been thrown down, and it is thought the wine has acquired a sufficient degree of maturity, it is poured or drawn off into a clean cask, which process is technically called racking, which is any method of transferring the fluid without disturbing the sediment. After this, should there appear to be any risk of the fermentation beginning again, a process is employed called sulphuring, which consists in burning sulphur matches within the cask; the sulphurous acid gas thus produced is absorbed by the wine, and this has the effect of stopping the fermentation. In some places this latter process is varied by strongly impregnating a small quantity of wine with this gas, which they then call stum wine, which they put into the cask for the same purpose.

Sometimes, after all these operations are finished, the wine is not completely clear, and requires to be clarified or fined by isinglass, white of eggs, or substances of that kind. Finally, the whole is completed by bottling. The fermentive process, as well as every part of the manufacture of wine, requires great attention united to experience and skill, and it varies exceedingly in different places; so that, although the subject has received considerable elucidation and improvement from the labors of Chaptal and other eminent chemists, particularly in France, where, perhaps, the best wine-makers in the world are to be found, yet the French themselves allow that there is still much to be done before fixed rules can be given; and our object, so far, has been rather to touch upon prominent facts in the manufacture of wines, than to enter into minute details.

In our next number we shall speak particularly of the different varieties of wines, their peculiar characteristics and properties, and possibly the most approved modes of manufacture and management.

CULTIVATION OF MADDER IN CALIFORNIA.

IT is not to be doubted but that about two-thirds of the planted land in this State is in grain, and it is also most unquestionably the fact that the annual increase of cultivated land is in a ratio very much greater than the increase of home consumption; therefore, as we have no foreign market for our surplus cereals—or rather, as our distance from a foreign market renders the profitable shipment of grain an exception instead of a rule—it necessarily follows, as one of the natural and inevitable laws of trade, a part of the great and uncontrollable rule of supply and demand, that without our agriculturists introduce new crops, their gains will yearly become less and less, until eventually they will receive no remuneration whatever, other than a bare subsistence, unless perchance before then, the falling of labor, the peculiar geniality of our climate, and the extraordinary fertility of our soil, shall have enabled them to reach a selling profit so low that they can realize a profit for themselves and, at the same time, be able to deliver bread-stuffs and feed-crops in the Atlantic States and in England and her dependencies, to compete in price in their own markets, with the produce of those countries. This is not utterly impossible: perhaps it may eventually be accomplished; but the days in which it will be done, are, like the countries themselves, far distant; and our farmers, in the meantime, if they wish to receive a pecuniary equivalent for their labors equal to that earned in other branches of industry, must cease giving their attention almost exclusively to grain-growing, and seek further sources of revenue in other crops.

Granting that it is not only proper, but that it has actually become, or is rapidly becoming, absolutely necessary for the agricultural community to turn its attention to, and experiment with, crops to take the place of our over production of cereals, will not madder answer for one of these? We think that it will; we believe that it will pay a greater profit than wheat at three cents per pound, or than barley and oats at equivalent prices. We know, from practical experience, that it will flourish here luxuriantly. Our experience was on a small scale, certainly—merely a few plants in a garden—but sufficiently large to demonstrate the fact that our soil and climate are eminently suited to its growth, and therefore we shall attempt to demonstrate that that growth can be made profitable, and hope that such of our readers throughout the state as have proper soil and other facilities, will prepare to give madder a thorough trial next year, upon a tolerably extended scale—there being no difficulty whatever and but little expense in procuring the seed or roots, either direct from the Atlantic side, or by ordering through a dealer here.

The *Rubia* of Linnaeus, of which there are ten or twelve species, belongs to the order *Tetrandria*, class *Monogynia*. Its general character is botanically described thus: *Cal.* Perianth superior, of one leaf, four-toothed, very small, or none; *Cor.* One petal, bell-shaped, four-toothed or five-cleft, without a tube; *Siam.* Four-filament, awl-shaped, shorter than the corolla-anthers simple; *Pist.* Twin, germen inferior, with thread-shaped style, cloven at the top, and two capitate stigmas; *Peric.* Two smooth berries united in one, with solitary, roundish, umbiculated seed.

The *Rubia tinctorum* or dyers' madder, has its *habitat* in South Europe, Asia Minor, North Africa and the Levant; blooms in midsummer, and can be distinguished from its relatives as follows: *Root*, perennial, succulent, widely spreading, much dividing, and branched at the top; *Stem*, annual, about three feet high, herbaceous, decumbent, branched, widely spreading, leafy, obtusely quadrangular, and prickly, with little hooks at the angles; *Leaves*, about six in a whorl, rough at the keel, elliptic-lanceolate, spreading, acute, about an inch and a half long, roughish above, narrowed at the base into a short, broad foot-stock, rough at the margin and back of the rib with spires pointing backwards, except towards the tips where they point the other way; *Flowers*, terminal, trichotomous, axillary, leafy or bracteated, yellowish-green, panicles rough and larger than the leaves; *Berries*, dark purple.

The *R. Chilensis* of the mountains of South America, the *R. lucida* of Majorca, Zante and Cyprus, the *R. peaeagrina* of England, the *R. fruticosa* of the Canary Islands, the *R. angurtifolia* of Minorca, the *R. browneii* of the south east Atlantic States and Jamaica, are also all used for dyeing, but the madder we have described is the best, and, in fact, the only one that is cultivated as a dye-stuff, unless it is perhaps the *R. cordifolia* in Japan.

Coloring matter is found in all parts of the madder plant, but only that contained in the root is of any practical importance. The herbage furnishes a good feed for stock, but it has the peculiar property of turning red the bones of animals eating it, and of causing cows kept upon it to give blood-colored milk; thus not unfrequently leading the unthinking housewife or milk-maid to throw away numerous milkings and to declare their cattle diseased. The consumption of madder in the civilized world is immense. Mixed with various mordants, it furnishes every shade of color, from the brightest scarlet of the Adrianople red, through the crimsons, bloods, purples, browns, etc., to an elegant light fawn. The imports into the United States, during the year ending June 30th, 1858, were extract of madder to the amount of \$40,567, and roots worth \$643,642; and as these are the cost prices at the ports from whence it was shipped, we may safely estimate that by the time freight, commission, duty, importer's profit, etc. are added, the manufacturers of the Atlantic States expend a million of dollars a year for foreign madder, every pound of which we believe could be profitably grown in this State, at prices that would compete with the markets of Europe.

The roots of the madder are long, succulent fibers, ranging in size from the diameter of a quill or less, to the thickness of a man's little finger or even larger; they branch numerously at the crown of the plant, a little below the ground, and run two, or three, or even four feet deep; whilst nearer the surface of the soil lateral branches are sent out in every direction, so that in two years the land is literally full of them—is a perfect mass of roots.

The fibers, when dry, show three distinct portions: First, the cuticle, epidermis, or outward skin which is worthless, and is threshed off with a common flail as soon as they are perfectly dry; second, a ligneous surrounding or bark which forms the main bulk of the root and furnishes a yellow or fawn-colored dye; and third, the

heart, which is red and very much the most valuable, but is seldom separated. The fact that two distinct colors are contained in the same root, and that the whole of it is ground together to a powder before it reaches the dyer, would seem to be a great drawback to its use; but practically this makes no difference, as the red is given out freely and the yellow not at all, or but very imperfectly, by maceration in cold, or luke-warm water; therefore the consumer soaks the ground roots several times, using the first liquor for the scarlets and very bright reds, the second for the more dingy and darker ones, and so on until the last water which, by the addition of a little alkali, and by being raised to the boiling point, extracts the entire remaining coloring matter, which is, according to the alkali used, either yellow or a beautiful fawn, or any shade between them.

The great producing places of cultivated madder are New Zealand, Alsace and other portions of Germany and Holland, the department of Vacluse and South France generally, the Levant, Asia Minor and the county of Kent and midland counties of England; though, of late years, the increased demand for turnips and other roots for food have rendered them more profitable in England, and, therefore, they are gradually driving madder from the ground, though it is now beginning to be raised in the Southern and Middle Atlantic States, but not as yet to an extent to be of any considerable commercial importance.

Madder will live and grow almost anywhere, and will stand a great deal of neglect and hard usage, but it does not like a very dry soil, and, for a good crop, it must be kept clear from weeds, and the presence of considerable alkali in the shape of lime and soda seems necessary to its thrift. We have no analysis of its herbage to refer to, but Robiquet, John, Kuhlmann, and Colin, in their respective experiments upon the dried roots, found that they contained about eight per cent. of lime, two of potash, one and a half of silica, and the one-twentieth of one per cent. of the oxide of iron, which latter is probably, to a considerable extent, one of the coloring principles. Supposing that the herbage contains one-half the quantities of these constituents of the roots, an average crop, 2,000 pounds of dried roots, would take from an acre of soil, two hundred and forty pounds of lime, sixty pounds of potash, forty-five pounds of silica, and one and a half pounds of oxide of iron; and these materials, unless they are already in the ground, must be provided. A good, sweet, sandy bottom containing lime, soda or potash, and silica, tolerably moist but not too wet, or a marley sand above clayey subsoil, or any rich, deep, loam—in fact just such lands as can be found in almost any part of this State—are eminently suitable soils for madder, provided that the place, if low, has first been well drained, or at least that no surface water stands in it so as to come into contact with the roots of the plant.

Having determined to try a madder crop, the first thing for the farmer to do is to make provision to have his seed here in November or December; the next is to select a suitable piece of ground, which, for the purpose of making a fair experiment, we suggest should not be less than one acre, and as it will be but an experiment, not exceeding five acres—or ten at the very furthest. The ground being chosen in reference to the habits and requirements of the plant, grub out all old roots, etc., and

clean off all stones, sticks and other extraneous matter—having, if the place has been in grass, or tule, or brush, first burned it on the ground to provide potash for the soil; then, if it is not naturally rich enough, manure it—though but little land can be found in the state that will require manure for a madder crop for years to come. Plow it very deep *during the summer*; the new Michigan or double plow, followed by a subsoiler, are the proper implements. Let it lie fallow for a month or six weeks, and then work it cross-wise with the same plows. We know that we shall be told here that this is an unnecessary trouble and foolish expense in our virgin soil, and that it is impossible to plow in dry summer weather. But it is not an unnecessary trouble; neither is it a foolish expense; nor is it impossible to plow, aye, and to plow well, in dry summer weather. We grant that summer plowing is laborious, fatiguing, troublesome and expensive, compared to that done in winter; but the worst baked land *can* be plowed and pulverized, and as good a furrow *can* be turned in summer as at any other season of the year, and the hot sun kills the seeds of the weeds and disintegrates the fallow in a manner that cannot be accomplished at any other period, and the increased crop and diminished amount of weeding consequent upon these facts much more than amply repay the additional labor and cost of summer plowing.

When the plants in the seed bed are from six to ten inches high, harrow your ground well, and with a light plow run a shallow furrow for the first row. Have the plants taken up very carefully and their roots instantly dipped into a thick mixture of mud, water, and cow dung, and as soon as possible set them in the furrow about a foot apart, and so that when they are covered in their roots will be about two inches deeper than they were in the seed bed; then immediately cover them with the plow, letting a man follow with a hoe to set them straight and slightly press the earth around them. Run another furrow six or seven feet from the first and plant in the same manner, and so continue until the field is finished. After this, work occasionally with a cultivator or light plow, and hoe or hand-weed near the plants, as the ground must be kept perfectly clean. When the plants have attained the height of a foot or fifteen inches, go along the rows and bend one plant to the right and the other to the left, and so on throughout, and cover them with soil so as to leave their extreme tips, say two or three inches above the ground. When these again attain the original height, proceed in the same manner until the whole field is filled with plants about a foot apart; after which, if you have been careful to keep the weeds out, your plantation will require but little further trouble as but few weeds can now make any headway amongst the thickset madder.

If your plantation was filled up tolerably early you can mow it towards fall and obtain about a ton of good fodder, and from two mowings the next season you will get from a ton and a half to two tons, but you must be careful not to feed to your milch cows unless you wish to frighten your women folks with red milk.

The crop is not to be harvested until the fall—in this State experience will probably designate July or August as the proper time—of the second year; then plow it out like potatoes, commencing at the outside of the field and running the plow around it beam deep, and following with a close-toothed fork or iron-rake to collect all the

roots from the loose soil. When gathered, pull all the bunches apart and wash them well, and dry perfectly either in the sun or shade, or in an oven if you choose to go to the unnecessary expense of building one. Shade dried roots give the best coloring matter and they do not lose quite as much weight in drying, but they require so much more time and care that the difference is more than counterbalanced. The crop of green roots varies in England from 5,500 to 7,500 pounds per acre; in Germany from 7,000 to 10,000 pounds, and in France, the Levant and the Atlantic States it ranges from 9,000 to 11,000 or 12,000 pounds; the average crop can safely be estimated at 8,000 pounds, and, as about three-quarters of the weight is lost in drying, we have 2,000 pounds of merchantable madder as the ordinary crop of an acre of ground; and a careful examination of the *prices current* of New York, Philadelphia and Boston for a series of years shows prices from ten to fifteen cents per pound, averaging from eleven and a half to twelve cents; therefore a yield of \$200 per acre is a fair, in fact a low estimate for this State. We had intended here to have made a calculation of the cost per acre, to show its superiority as a remunerating crop over wheat, but the already extreme length of this article precludes our doing so; nor is it necessary, because we have given such complete details of the work required that each reader can make the calculation for himself and in accordance with the prices of labor in his own locality.

After the first plantation has been formed, the best plan, perhaps, of making a new one is to set out pieces of roots instead of seedling plants; and those who prefer to commence in this way, can easily order sets from the Atlantic side; packed in sand, in the fall they will carry without injury or difficulty. But we think that the safest and least expensive course to pursue at first will be to grow the plants from the seed. It may be sown at any time through our rainy season, in any tolerably deep, light, rich garden-mold with which a little wood ashes has been mixed. They should be planted about an inch deep and three or four inches apart each way. The young plants will stand some frost, but if it becomes too heavy they should be protected. If the sowing is late it will be better to force the seed by digging out the bed and mixing the ground well with horse manure, and returning it to its place and covering it five or six weeks with sifted mold mixed with ashes; then let it stand a week or ten days to exhaust the excessive heat, and sow. The young plants will appear in ten days to two weeks, whilst otherwise the seed would not germinate for six weeks or two months.

BARK LICE.—“My practice is to wash the trees throughout with strong soft soap water, and sometimes to put bits of hard soap in the small crotches about the tops of the trees, and follow it perseveringly. I, for one, am down on grease, because I know it to be injurious. So are strong chemical caustics; they are dangerous in inexperienced hands.”—*Calumet*.

GRAPE-GROWING AND WINE-MAKING IN CALIFORNIA.

WE have been permitted, says the *Daily Union*, to copy from the manuscript of the Agricultural Society's Report for 1858, now in the hands of the printer, the following treatise on "the grapes and wine of California." The writer is a Hungarian gentleman, claiming an experience of many years in the culture of the grape in his native land, and from travel and observation in the vine districts throughout Europe, as well as from long residence and a practical acquaintance with the art in this country, he is doubtless well qualified to impart a variety of useful information on the subject:

THE EARLY HISTORY OF THE VINE CULTURE IN CALIFORNIA.—The grape vine was brought to California by the Catholic priests in the year 1740 or thereabout, and was planted at the Mission San Diego and Mission Viecho, situated about sixty miles from San Diego in Lower California. Tradition says that said grape vines and olive trees were brought at one and the same time from Spain. Our modern California grapes were, to all appearances, multiplied from these vines, set out originally in the above named places. It is certain that no other variety than this one can be discovered among the native vines at the present age, and it is almost impossible that if several varieties had been imported at that period, they would have so completely run out as to leave no marks of distinction whatever.

The priests and native Californians planted vines in small patches for their own use only, without regard to locality or a view of improving the vine.

Their mode of making the wine—also still in use with some—was to pick the grapes, crush them with the feet, which was the business of a big Indian, put the whole mass in raw ox hides, made sack fashion, for want of barrels; if barrels could be procured they used them also; and after the fermentation, to draw the wine in them, or very often in hides sewed together, water tight. If they made white wine, they squeezed the juice out of the crushed grapes, and put up said juice without the stems and husks for fermentation. From the balance they made their *aguardiente*, by putting stems and husks together in the still. Brandy was not made until later.

The priests multiplied their vines by planting from the above named Missions the cuttings through all California. It is said that the wine made at the Sonoma Mission was considered by the Padres the best wine made in California, and the priest here had to send to his superiors living lower down some of the wine for their especial use, though they raised more wines at those Missions than at this small Mission here. For the above, my authority is General Vallejo, who has had a vineyard many years since, and annually extends his vineyard considerably.

I annex here the amount of vines in California up to 1858, extracted from the State Register. I may add here that, according to good and reliable authority, the whole number of vines will this winter be doubled. Sonoma Valley has set out alone over 400,000 vines this winter. The Register gives Sonoma and Mendocino

counties, in 1858, only 87,621 vines; this must be an error in printing, and should say 187,621, as I myself planted over 80,000 vines last year.

By this amount given in the Register, the yield of wine in 1860 should not fall short of 9,000,000 of gallons, and 400,000 gallons of brandy.

[The table will be found in the State Register for 1859, p. 243.]

The increase from 1856 to 1858 was, therefore, a little over 263 per cent., and the arrangements made for this season will surely increase the present stock to six millions, if not more.

CLIMATE.—The California climate, with the exception of the sea coast, especially where the prevailing western winds drive the fogs over the locality, is eminently adapted for the culture of grape vines, and it is proved conclusively that no European locality can equal, within two hundred per cent., its productiveness. The oldest inhabitants have no recollection of a failure in the crop of grapes. The production is fabulous, and there is no doubt in my mind that before long there will be, accidentally, localities discovered which will produce as noble wines as Hungary, Spain, France or Germany, ever have produced. Vineyards planted in various counties, from San Diego to Shasta, have proved magnificent results, and leave no doubt in the mind that the north is as favorable and productive as the south.

LOCALITY.—In California, locality is not so material as in European countries, especially where, during the summer season, a good deal of rain falls. If the vineyard is not exposed during the whole day to the sun, said rain will rot and damage the grapes. California having an even temperature, is warm, and without rains in summer, almost any locality will do; but if a gentle western slope can be obtained, by all means it should be taken.

SOIL.—When the planter resolves to plant a vineyard, he should determine whether he is planting to produce grapes for wine or for the market. If for the former, he must look for a soil which is made by volcanic eruptions, containing red clay and soft rocks, which will decay by exposure to the air. The more magnesia, lime or chalk the soil contains, so much the better. This kind of soil never cracks, and keeps the moisture during the summer admirably. Such soil will produce a wine that will keep good for fifty or one hundred years, and improve annually, is not liable to get sour, or, when exposed to the air, after one year old, to get turbid and change color in the bottle or glass.

If such soil cannot be got on the ground desired to be laid out for a vineyard, the second best may be taken, which is a shell-mound. There are many localities in this state, even as high as the mountain tops, where acres of land consist of decayed shells. Such soils will give a good wine in great abundance.

The next best to the above soil is a gravelly clay, slightly mixed with sand, so that it will not bake. If it cannot be red color, dark black; but avoid gray clay, which bakes in summer.

The last of all which may be used for the production of wine, is a light, sandy, gravelly soil. This will give an abundance of wine, but it will not keep for any length of time. It will soon change color and become sour when exposed to the air, and the only mode of keeping this kind of wine for years is by adding brandy or alcohol to it, which, of course, deprives it of its purity, and makes the same injurious to the health of the consumer. The soils described above are recommended for producing wine as above stated, but for producing marketable table grapes the planter should select a piece of ground which is a rich, black, gravelly, or sandy loam, exceedingly mellow, as most of the alluvials are; and if well rotten manure from sheep or cattle corrals can be obtained, it will pay well to haul it on the ground. To be prepared for the grape vines it should be moderately moist, though not too much. In this state often, deserted Indian villages are found; in such localities the soil is exceedingly rich; a bucket full of it in the hole of a vine will astonish the planter by its effect. Such soils as just now described, either made by nature or artificially, will produce magnificent bunches of grapes, with large berries in an immense quantity, which, of course, will please the eye and palate, as the bulb or skin is thin, and consequently the best qualified for table use.

PLOWING.—The best mode to plow the land is with the so-called deep tiller, for with it, by putting three horses abreast, you can plow twelve inches deep, except the soil should be very rocky. Follow this plow in the same furrow with a common shovel plow, or, as it is called in some places, bull tongue. This simple instrument, with two horses attached to it, will tear up and pulverize the earth ten or twelve inches more in depth. There are various designs of subsoil plows, but most of them require a great moving power, and will not answer after all. The above named bull tongue is successfully used by many planters in Sonoma and Napa valleys, but it matters very little what plows or subsoilers the planter uses, as long as he plows and subsoils his land from twenty to twenty-four inches.

LAYING OUT THE VINEYARD.—It is sufficiently proved, by close observations in Europe and California, that the vine planted eight feet apart is the best mode, especially in California, where land is yet cheap and labor high. Vines planted the above named distance can be worked with the shovel plow and one horse. Eight feet is as close as persons ought to plant; if planted closer the vines, when five or six years old, will branch out considerably, and in the months of May, June and July, it would break all the tender vines by using a horse and shovel plow. The planter would be therefore compelled to employ hands with hoes, and this would cost, in the first instance, ten times as much as horse power; and secondly, it would not do as good work, for no man will hoe as deep as a shovel plow goes.

Persons laying out vineyards must not be miserly, but leave wide roads, say twelve feet, at least one road every fifteen rows, which would be one hundred and twenty feet apart; otherwise, when the vines bear, and the grapes are picked, the person picking the same must carry a heavy basket a long distance, to the road where the

cart stands, to haul it to the press-house. In reality, no person will lose anything on the crops on account of the road, for the rows adjoining each side of the road will bear more, as they have an additional four feet of ground to feed on. No planter should, under any circumstances, plant trees of any description in a vineyard. A vineyard must be a vineyard, and nothing else! I need not waste room here to say how to lay out the rows; every man knows that, and has his own mode for it; but a straight row in every direction is essential to a prosperous cultivation.

DIGGING HOLES.—When the land is laid out, as above recommended, and a stick stuck at every point where a vine is to be planted, a hole must be dug, twenty inches square and about two feet deep. The ground from said hole is to be laid as follows: The top ground to your right, the second ground to the left, and the third in front of the hole; then the bottom of the hole should be well dug up with the spade, leaving the last ground in the hole. The earlier the holes are thus finished before planting the better; then the longer the earth is exposed to the atmosphere and rains, the more it will be fertilized.

PLANTING.—There are two ways of planting—one with cuttings, and the other with one year old vines. There is a good deal of difference of opinion amongst good and practical vine-planters. Some argue that if a cutting is properly planted at once on the spot of its destination that it will be more advanced in its third year, and, consequently, it will bear in said year more than the rooted vine, which first is set as a cutting in the nursery, and the next year transplanted on its destined spot. It is reasonable to suppose this to be the case, but it still leaves a doubt in the mind whether a larger tract of land can be or will be as well worked as a small one. In a nursery, by good care, the cuttings can be rooted four times as strong as in a large field; besides, in the latter case, whether the vine has good roots or not, it is left where first planted; but when the rooted vines are taken out of the nursery for transplanting the planter will select only those having faultless roots. But the greatest advantage of the nursery is, in my opinion, the fact that if the planter intends to plant one hundred acres of vineyard with cuttings he will have to cultivate one hundred acres during the summer; but if he plants his cuttings for said one hundred acres in a nursery, two acres of ground will be enough to raise sixty-eight thousand rooted vines, the number required for one hundred acres. Now, to cultivate these two acres in the nursery, it will require ten days' labor, with one horse; while, on the contrary, for one hundred acres, during the months of March, April, May, June and July (after that time no more plowing is required,) you need two men and four horses—equal to two hundred and sixty days' work, and double that for the teams—then the board of the men and feed for the horses during that period. However, this is a matter of opinion, and each planter will follow his own idea, or will accommodate himself to surrounding circumstances. But now to the planting.

When the holes are filled as above described, if you plant cuttings, have said cuttings two feet long, bend the cuttings ten inches deep in the hole near to a right

angle, the lower part of which is laid horizontally on the bottom, and the upper part on the side wall of your hole, the top of it to be above ground three inches; then fill the hole from the ground surrounding the hole, which, of course, is top ground; tramp then the earth fast on your cutting that no vacancy shall remain in the hole, otherwise foul air will gather in said vacancy and the cutting become moldy and will not live. But if you plant rooted vines, your holes will be filled to six inches. Now, take your rooted vine, spread the roots on the bottom, and throw from the surrounding top ground on the root, shake it well so that the pulverized ground shall get amongst said roots, then tread gently with your foot around the root. It is still better if you prepare from one part of fresh cow manure and three parts of black earth with water, a mud mixture of the consistency of tar. Before planting, put your rooted vines in the same, and when so dipped, turn them in the bucket round and round; by this every root and fiber of said vines will be surrounded with this tarlike stuff, and prevent the same becoming moldy under ground. After this the ground in front of the hole—taken out the last of the same—is to be leveled so about the vine as to leave a dish-like excavation around the same, as a receptacle and conductor of moisture to the roots. Be careful never to plant your vines too deep. It is better if you make a mistake to have them two shallow than too deep.

[TO BE CONTINUED.]

HORTICULTURE.

SONOMA, July 5th, 1859.

Mr. Editor:—Your July edition, number one, has arrived, and is generally considered excellent; and I may add here, that we Californians ought to be proud for having as neat an edition as but few of the oldest States can boast of.

In this number I find an extract from the *Alta*, and one from the *Napa County Reporter*, in regard to a call, made by Col. A. Haraszthy, for the organization of a Society, etc.; and this number contains also the proceedings of the meeting held. Permit me then, to state the further progress and results of this enterprise.

The interest taken in this laudable undertaking, by the people of Sonoma, clearly shows their praiseworthy desire for progress, willing to collect from all parts of the world such fruits, vines, seeds, etc., which from nature this favored State does not yet possess. The committee, by the zeal and energy of Judge Bright and Mr. Wm. M. Boggs, had in less than ten days over four hundred shares taken in the Valley of Sonoma, and according to prior resolutions the chairman called the subscribers to meet for the election of their permanent officers. According to this call, the shareholders met, adopted their constitution and by-laws, and elected for their officers the following named gentlemen: For President, Col. A. Haraszthy; Vice Presidents, Wm. Hill and Mr. Swift; Secretary and Treasurer, Mr. Sears; Directors, Judge S. B. Bright and Wm. M. Boggs. The shareholders manifested much spirit of enterprise and everything went on harmoniously, with great unanimity and good feeling.

When the board of managers first met, a donation of ten acres of land, on the Sonoma creek, adjoining the county road, was offered, by Messrs. Sears and Boggs, to the Society, gratis forever, if the Society would put their garden thereupon; and Mr. Sears furthermore offered the adjoining lot of thirty acres for ten years for the use of the Society, with the condition that said Society, at the end of eight years plants such fruit trees on said land as it possesses; the above two liberal offers the board of managers, of course, accepted with thanks, and submitted the same for the ratification of the shareholders, who ratified said offer, and expressed their thanks for the same. The city council also granted a tract of land (2 1-2 acres) which lies between the lands of Messrs. Sears and Boggs; so now the Society has twelve and one-half acres of land forever, valued at \$150 per acre—as the adjoining tract was sold for this price. The soil is eminently adapted to the purpose, being an old Indian rancheria, and has the whole Sonoma creek for irrigation; the locality is beautiful, within half a mile of the city of Sonoma. The board of managers have already determined to go to work at once, have ordered a splendid picket fence, six and one-half feet high, given notice for bids to erect a building of brick, for the gardener's residence, etc. The whole number of shares, as I understood, are now taken, and everybody is firmly convinced, from the known energies and characters of the officers, that they will carry this enterprise through with credit to themselves and infinite benefit to Sonoma Valley. An extensive correspondence has begun by the President with foreign countries for vines, fruit trees, shrubs, etc. The orders are sent thus early that everything shall arrive in due time.

Respectfully yours,

VINEYARD.

MOUNTAIN FRUIT-CULTURE.

Editor Culturist:—During a recent hasty visit to Placer county I saw much to approve and much to condemn, with regard to the mode of cultivation and dressing of fruit trees and vines in several localities which I examined. The most glaring and injurious feature is the general style of high training, almost everywhere observed, which exposes the trunk of the tree while it is young and the bark thin and tender to the sun scald, which dries the outer bark so that no albumen finds a passage and place of deposit, so as to form woody matter between the outer bark and the wood of the trunk. Now as no sap can flow on this side of the tree, the surface exposed to our long and hot summer sun becomes perfectly seasoned, and most such trees will be found warped and fit subjects for the borer to finish. It seems to me strange that nature, everywhere teaching us the correct principles of arboriculture in its rude yet most complete success, should not be imitated by reasoning, comparing man. All over the mining districts, even low down on the foot-hills, innumerable young pines are springing up from the cone seed of the few stragglers left by the vandals. These incipient giants of the forest are growing with surprising rapidity, and it is noticeable

that, from the very ground upward, they have a complete mantle of boughs which keep the sun's rays entirely from the body of the trees which lift their heads towards heaven in a straight line. On trying the ground under these pines where they had attained size so as to shade the ground, by having formed a thicket, I found it moist and comparatively light; while a short distance in an opening, it was dry and hard as an adobe and the scant grass sere. Is not this an argument in favor of thick planting and low heads, so as to as nearly as possible shade the ground? Another error, entirely too aggravating to a horticulturist, is the practice of planting trees and vines without subjecting any of the land to cultivation, except where the tree or vine is planted, and allowing the wild grasses or a crop of barley to grow between, which rapidly exhausts the surface moisture and aggravates the heat of midsummer and autumn by an accumulation of dry material on a parched surface. Instead of this, was the land kept in a good state of cultivation, by frequent stirring of its surface, there would be capillary attraction sufficient to render the atmosphere much more humid, the advantage of which to the foliage, when the fruit is swelling off and taking on color, can hardly be estimated.

Irrigation, which is made use of entirely without proper economy of its requirements, is injudiciously applied. Most persons form a gutter along side of the rows and let the water run uninterruptedly. In all cases where it is designed to irrigate, the soil should be made mellow to a considerable depth and the water applied some distance from the tree, and never in such quantities that the water stands in pools for any length of time, or, in other words, is drowned. The next day after running on the water, the land irrigated should all be worked up deep and fine with a forked hoe, or what a German terms a *karsch*, which is an implement with two steel teeth about ten inches long and six apart, fast to a handle like a hoe. I am using this implement this season with great satisfaction in its effectiveness. Instead of loosening or stirring the surface after irrigating, most persons do nothing to it, and the consequence is that it soon cracks open and bakes down in clay and is dryer than before the water was put on, producing the necessity of frequent and copious watering to keep the land in any condition to make the trees thrive. It is worthy of remark that since there are ditches and canals distributing water over almost every ridge in the mountain districts, new springs are bursting forth from the hill-sides, and old ones have an increased volume. The seepage from this source probably is the cause of this flourishing condition of the young pines, and whatever there remains of the forest trees. As this ditch water percolates along on the surface of the bed rock, and the soil above is thin, it becomes a matter of certainty that vast tracts of land in the mining districts, possess all the requisites for good vineyard and orchard sites, without the expense of artificial irrigation, as with proper cultivation there would be moisture sufficient to produce a growth of well matured wood, with fruit buds fully developed, by the time the current year's fruit had ripened—say on grapes and early apples and the like, by September. I should desire the terminal bud to have become formed and hardened by this date, so that it will receive no injury by the early frosts. Artificial irrigation during the summer, and particularly if prolonged into August, is

almost certain to expand the spurs, which are fruit buds, into blossom in the fall, or force them into woody shoots which are growing rapidly when the first frosts fall upon them in their helplessness to resist the unnatural shock.

All through our mountain districts, whenever the subject of orchard planting is projected, the first question propounded is, what are the means of irrigation? Now that places which have facilities for extensive irrigation are not desirable, I do not contend; but that too much stress and importance is attached to it I am fully convinced. An instance of this I may be permitted to mention. Dr. Crandall, of Auburn—and, by the way, he has one of the most delightful and highly adorned and cultivated places to be found on the Pacific coast, and deserves to have it too—has growing on his grounds a quantity of grape vines planted four years since; he had large trenches or borders dug and filled with bones, such as bullocks' heads and other offal. These vines last year had made a most extraordinary growth and set a large quantity of fruit; and when the grapes had attained the size of buck shot, his gardener gave the vines a thorough irrigation and pruned off a large quantity of the foliage; the consequence was that the entire lot of grapes mildewed. This season the doctor will be cautious that no water gets near the vines, nor will he allow the foliage to be taken off, as there are not less than four hundred bunches of grapes on each vine, which will require a large amount of foliage to give supplies of food to the grapes, which, be it remembered, take most of their food from the leaf—not from the root as many suppose. These vines of Dr. Crandall's, alone, are worth a trip to Auburn to see. Of this gentleman's success in the culture of the apple and pear, I may have something to say on a future occasion.

Adjoining Dr. Crandall's is the residence of the Hon. C. A. Tuttle; a place also well stocked with choice fruits and vines. Mr. Tuttle has a few hundred grape vines on a side-hill, where the red soil is filled with fragments of decomposed rock. These vines bore a large crop of grapes last season without irrigation, and it is worthy of note that the grapes were so superior in flavor as scarcely to be recognized as the California grape, of which latter variety they were.

The style of culture adopted by Mr. Tuttle, is to let the vines trail along near the ground, the object being to have the foliage spread and shade it as much as possible. These vines are again loaded with fruit.

Eight miles further up, I visited the Lisbon ranch, the property of G. W. Applegate, Esq. Here twelve thousand rooted yearling vines were set this season, and all are growing finely with scarcely a miss. Mr. Applegate designs planting thirty thousand, and to continue to extend his vineyard annually. This will become a famous wine-producing vineyard, as the soil and location are admirable, and under the care of his vintner, Mr. Deady, an educated English horticulturist, it will soon demonstrate the problem, that California mountains will be worth more to her for wine than gold.

RIVERSIDE.

SACRAMENTO, July 11, 1859.

HOW AN ORCHARD WAS PLANTED.

Editor Culturist :—If the tap-root, deep and shallow planting advocates are not exhausted with the long controversy, I would like, for the benefit of troubled minds, to relate my experience. In a late number of your paper we found one fact and one spring's experience, illustrating the small hole success of pine tree planting; and having had an experience just the reverse in pines and fruit trees, I will give you an account of it, first giving you that of the pines and then of the apple trees. The first were transplanted with a ball, in the month of November, into large deep holes and watered every week the first summer, twice in the season the second year, and not at all since. Ninety per cent. of them have lived and are now growing luxuriantly. And now in regard to the apple trees. I selected yearling trees from a loose soil which admitted their being taken up with the roots but slightly broken, and planted one orchard by thoroughly loosening the ground with the plow to a depth of nine inches, throwing out each way with a plow on the lines crossing the stakes, where the trees were to be set; then with a spade loosening up the earth where the tree was to be planted, carefully filling in, so every fiber had fair play. This I called shallow planting. The tap-root had no road prepared for it after the first fifteen inches, while the surface roots all had good chance in the mellow soil, which was kept carefully free from weeds; the planting of this and the following having been made in the latter part of March.

In the second orchard of the same lot of trees, the holes were all dug two and a half feet wide and the same depth, stirring up the bottom with a spade until the soil was loosened to three feet; the top dirt thrown in and sides caved, until a deep, wide bed was prepared for each tree, which was planted with well spread roots, having a decided inclination downwards—very much like your figure, page 317. This orchard was cultivated like the former; both had the subsoil plow run through at right angles, within two or three feet from the trees, in May, and both had one watering in the early part of June, and none since.

The growth, the first season, was very near the same: the shallow planted orchard grew latest—for reasons given on page 489, paragraph two—and suffered more from frost blight. The entire deaths in this orchard, previous to the frost blight, was nearly double in proportion to the losses in the second orchard; but in this connection it should be stated: number two was planted five days earlier than number one, and had the advantage of one more light shower. The second spring, number two started with the evident determination to win the race, and in the fall was thirty per cent. greater in growth, in future promise, and again suffered less with frost blight. This spring there is again a great vigor, and to more fully show the good effects of deep, large holes, a plantation added to number one, for which large holes were made, the year after that was planted, bids fair to overtake it in its growth this season. Another item which I had nearly forgotten—the trees with holes, but in few cases needed stakes; those without, needed many.

With these experiences, Mr. Editor, I am in favor of tap-roots, large and deep holes; and having made my confession, I hope some other brother in horticulture will give us the lights of his practice—dating back more than one season—for mutual benefit.

UP COUNTRY.

PEACH TREES.

Editor Culturist :—There is no use of talking up the bay climate for peach trees. Without protection from the winds they will not thrive so as to be a paying fruit. The most serious evil of the winds is their chilling effect upon the leaves in their young growth. Whatever theory there may be to account for the curled leaf elsewhere, there can be no doubt about its cause here. It is due entirely to checked circulation in the leaf; it is something analogous to congestion of the lungs, and unless the tree can be protected from this disease, it must come to an untimely end. In some orchards, at Sacramento, this disease is annually making destruction; but there, the great growing power of the heated term that alternates with, and follows the chilling blasts of March, enables the tree to put forth a new crop of leaves, which secures the perfection of its fruitage. Of course this excessive draught upon its constitution, gradually wastes its vitality and brings it to early decay.

In this weakened condition which is sure to result, the peach borer attacks the tree and helps the destruction. We have seen the borer among Major Bidwell's trees, at Chico. It works among the surface roots, and in the forks of the limbs a worm penetrates. They are seen at once by the observant culturist, who is put upon his guard, and need not be particularly described. When they get fair hold upon an orchard there is but one remedy, viz: root up your trees and burn them to ashes; then set out a new orchard as far from the spot as possible.

It may not be generally known that New Jersey, once the great peach state, no longer is a peach-producer of any consequence. It is true, however, the greater bulk of its peach trees have been uprooted and burned, on account of the yellow leaf and the borer. The yellow leaf has doubtless its origin in the same cause as the curled leaf. It is apparently a slower process of consumption; we use the term because the leaf is the lung of the plant. Like as the blood of animals is purified by contact of air through the lungs, so is the sap of plants aired and purified through the leaves. We should profit by the experience of our neighbors: let every horticulturist make known what varieties of peach are prey to the corrugated leaf, and what kinds, if any, escape. Especially let us turn attention to raising new varieties from the seed. Nature has infallible laws of compensation and recuperation. The tampering of art with the process of generation and reproduction, tends always, and certainly, to the exhaustion of species. It makes fine fruit to the taste, but often, perhaps always, at the expense of native hardihood. Let us not, therefore, abandon entirely our efforts to let nature infuse, now and then, some healthy vitality into our trees, by the generation of new varieties, after its own fashion.

• ANTHRAX.

PEACH LEAF CURL.

Editor Culturist:—Having suffered a great loss of my peach crop for the last two years, from the disease called the curl, I have given the subject all the attention that any one interested in the successful growth of a favorite fruit could possibly be expected to bestow upon it. I have watched its progress from day to day and from hour to hour, and I have tried to connect its appearance with certain changes of weather, as from heat to cold, from wet to dry and *vice versa*; and have tried every remedy that I could devise or my neighbors suggest to stay its progress after it appeared; but all to no purpose.

It made its appearance under almost every variety of condition of soil as well as climate. One tree standing in a low and wet situation, was attacked simultaneously with one in the most dry, warm and airy position in my whole orchard. One would first show the disease in the middle of a warm and sunny day, another during a cold and foggy one. There was also a week or ten days difference in the time of its development in trees immediately contiguous to each other, and in one or two instances a part of a tree would be affected several days before the rest of it seemed, in the slightest degree, affected.

No variety of peach seemed exempt, and what appears to be at variance with the views of most vegetable physiologists, that trees raised from seeds are most likely to become acclimated and possess more of vitality than old and long worked varieties, I noticed that seedling peach trees, treated in every respect—as regards transplanting and after cultivation—precisely like the old varieties, were ever more subject to the curl, and were more severely affected when attacked than others.

As to remedies, I tried many; and for a time supposed I had been eminently successful; my trees put forth a fine, fresh growth of new leaves, and considerable fruit was saved, and now bids fair to mature finely; but here is a sticker: I tried an application of lime water to one, sulphur water to another; to one I dug in ashes around the roots, to another lime, another salt, and to yet others, I made no application whatever, and now I find but little difference among them; if there is any, it is positively in favor of those to which no remedy was applied.

So far then, as my experience goes, I know of no remedy, after the disease makes its appearance. I shall try another spring what virtue there may be in preventives, for if there can be no remedy found, it stands the peach-grower in hand to discover a preventive.

YUBA.



AGE OF SHEEP FOR MUTTON.—A late English writer says: "A sheep to be in high order for the palate of the epicure, should not be killed earlier than five years old, at which age the mutton will be rich and succulent, of a dark color and full of the richest gravy; whereas if not only two years old, it is flabby, pale and flavorless."

CUTTING BACK GRAPE VINES.

IN the July number of our first volume, we remarked that there was a mistake abroad in reference to the utility of cutting back the bearing shoots of grape vines, with a view of increasing the size of the fruit or hastening its maturity. We ventured to do it because our own experience and practice, for many years, had convinced us that the cutting back of the bearing shoots was positively injurious. But we were assailed, or rather our opinion upon this point, at every hand, except by a single Los Angeles grape-grower. It seemed an innovation upon the established practice of nearly all the best grape-growers in the country, and this was what alarmed many from their propriety. Well, we calmly awaited the result of their first astonishment, and all the slurs cast upon us by "the only agricultural paper in the state," and what do we see now? Why that same paper is now advocating and recommending the very practice we were the first to recommend.

On a recent visit to Sacramento, we called on E. B. Crocker, Esq., one of the amateur fruit-growers of that city of gardens; and taking a walk through his highly kept grounds, we noticed that the grape vines were wholly without the mutilation so common with the vines of many reputed good and practical grape-growers. Mr. Crocker remarked that last year he cut back the bearing shoots of his vines; but that they did not do well or fully meet his expectations. That this year he had determined to allow all to grow, and the promise, at this time, of an abundant crop of superior fruit was never equalled.

When the bearing shoots are headed back to two or three joints from the last bunch of grapes upon the vine, the fruit is robbed of a greater part of those return juices from the leaves that constitute the food of the growing fruit, and such practice cannot but be injurious. Of course it is too late this season, for those who have followed in the old practice, and have already cut back their vines, to profit by the suggestion; but they can if they will, make a note of the fact and compare the result of the two modes as practiced.

An opportunity is presented, in the city of Sacramento, to make this comparison the present year. The Corresponding Secretary of the State Agricultural Society, O. C. Wheeler, Esq., has adopted or followed in the old beaten track; his vines are cut back to within a few joints of the fruit, and we think greatly to its injury. The vines of Mr. Crocker are not cut back, and we predict a greatly superior fruit in every particular.

The effect of a too severe heading back of the vines of the Secretary, is, we think, apparent in the production of small, weak laterals from every bud beyond and around the fruit; that these shoots are wholly insufficient and unsuited to a proper elaboration of the juices of the vine, fitting it as a proper food for the growing fruit, we believe will be demonstrated in the smallness of the product and its late maturity.

DEEP PLANTING.

Editor Culturist:—I wish to plant out an orchard of pears and apples, upon a piece of land that seems rich enough in all the elements constituting a fertile soil except the presence of the proper moisture during the summer months. Both wheat and barley do admirably; indeed, any crop that can be harvested before the middle of July; but for any product requiring a longer time to mature than about the first of August, it has shown itself to be but poorly adapted, every vegetable upon it except Chili clover becoming seared and dry long before maturity.

I have no facilities for irrigation and must depend upon the natural moisture contained in the subsoil, to sustain my trees if I plant them. I find so many opinions in reference to deep and shallow plowing and planting, that I am utterly at a loss to know what way to proceed to secure the certain and best growth of a young orchard upon my land. My location is far away from the ocean coast and its moist winds, so much so that there seems hardly a particle of moisture in the air, day or night, for months, and I find that to stir the surface soil only renders it drier. Nearly all the nurserymen advocate shallow planting and surface roots, and cultivate their trees accordingly; others recommend deep plowing, with a deep soil encouraging the roots to go to the bottom of it, and as much further down as they choose to go; now one or the other mode must be the best for our peculiar climate, and soil as affected by climate. I have no weeds to contend against in summer, because my land is too dry for them to grow; should I continue to stir the ground around my trees when it only serves to make it drier: and should I procure large trees or small: and is there any summer preparation of the ground that would facilitate or advantage the planting out of an orchard upon my land when the proper season arrives? Answers to the foregoing inquiries, or either of them, would be received with pleasure and perhaps profit by a

NOVICE.

WHAT WE THINK OF IT.—A great deal of paper has been spoiled and ink wasted by the advocates of deep and shallow plowing, and planting of trees and seeds, and still nothing like a fixed rule has been attained that can be applied in all cases. Nor does there seem to be consistency in the views of some men in relation to the subject. A nurseryman who advocates the growth of surface roots upon trees to the exclusion of the deeply running roots, will, with the very next breath, advocate deep plowing and even the trenching of ground for an orchard; but with how much of consistency we leave for others to form their opinion. If they would prevent the roots from striking deeply into the soil, why go to the expense and trouble of loosening it? Is it not for the very purpose of enabling the roots to penetrate it? Then why persist in advocating the growth of only surface roots?

In the culture of plants, vegetables or trees, we have advocated a system of deep tillage; but it must be done at the proper time. And what would be deemed deep tillage for one species of plant or tree, would be shallow for another. Hence we

would not plow as deep for onions or lettuce as we would for corn or potatoes or the orchard tree. We would have the soil deeply stirred for the wheat crop, but it should be done so long previous to the sowing of the grain, that it might attain a sufficient compactness at bottom as to favor the production of a multiplicity of small fibrous roots instead of a few large and coarse roots, which are the only ones formed where the soil is too light and porous; but at the season of sowing the grain, we would stir the soil and cover but shallow the seed. Nature does this everywhere.

But in planting the orchard tree, or plants with deeply running roots, we would plow as deeply down as the fertile soil would permit, without turning up too much of the subsoil. It is an error to mix up much of the deep subsoil with that which nature has placed upon the surface and fitted by its very position with the food best adapted to the nourishment of the newly germinating plant. The subsoil may be stirred, and in many cases, can be to advantage; but it should still remain the subsoil, and is just as proper in its place as is the surface soil, and just as necessary to the development of a perfect vegetation.

In the leaching to which all soils are more or less subject, in the process of imbibing the rains of the season, the alkalies or salts, of whatever nature, imbibed by the surface soil from the atmosphere or the decay always in progress upon the surface of all lands, is conveyed by direct filtration to the less impervious subsoil, there to await the wants of vegetable growth when most in need of its peculiar properties. Thus whilst the surface soil of a wheat field is the best adapted to nourish the soft vegetable fiber of the immature stalks of the cereals or other annual plants, there are other substances necessary to furnish the lime and phosphates to the ripening grain and the hardening and stiffening of the straw that the roots can no where find but in the subsoil.

How inappropriate, then, to reverse the order or greatly change the natural condition of either surface or subsoil, or their relative position. We believe the practice too, of digging holes deeper by far than the natural depth of the soil, and filling the same with surface soil upon which to set out a tree, an equally erroneous practice; because we believe the soil and subsoil should each occupy their appropriate position, besides the fact that, after the first or second year from their setting, the roots will have extended far beyond the influence of the soil in which the tree was first set, and of course, coming in contact with an entirely different soil and oftentimes very much to their injury.

We would set a tree no deeper in the ground, at the time of transplanting, than the same would have stood had it sprung from the seed in the place it was destined always to occupy; but we would make the surface soil mellow and deep, and the subsoil, if not naturally open and porous, we would endeavor to make as mellow as could be, so far as the entire of the same could be acted upon; but not by simply loosening a hole in the same, immediately beneath the tree and no where else; unless by so doing we can reach a more porous substratum beneath, in which the roots can freely range.

In the transplanting of trees, we have invariably recommended small trees; because

we believe they suffer less with the same amount of care in removal than large trees; still, large trees can be safely removed, provided the necessary care is observed in saving the roots from injury. There is an advantage always in giving the roots a downward direction instead of entirely a horizontal one, as it approaches more nearly the position of a natural grown tree. The deeper you can allow the ends of the roots to take position at the time of setting, the less likely will they be to suffer from the surface drought the first year of their setting.

We can hardly imagine any summer preparation of the soil fitting it for being set to orchard, any better than its devotion to any ordinary farm crop in which the land received a deep spring plowing, and an after culture sufficient to keep down the weeds till the season becomes too hot and dry for them longer to vegetate.

FEEDING HONEY BEES.

Editor Culturist.:—I saw in the *Culturist* of last August an article on feeding honey bees; and having several hives, I determined, after the season for gathering honey from flowers was passed, to try the experiment of feeding them on pure loaf sugar and water, which you stated could be made a remunerative business. Accordingly I commenced a few weeks ago to feed my bees, but find great difficulty in preventing them from robbing each other. The front of each hive presents a scene of warfare from sunrise till darkness closes them in for the night; thus they go on from day to day. I have contracted their place of entrance to a size that will admit of only one bee passing at once: sometimes I am obliged to close them up for a day. I keep the hive up from the bottom board sufficiently to admit air and prevent the ingress and egress of the bees.

My object in writing to you upon this subject is, to obtain information, if possible, how to prevent bees from robbing each other; for I find that those that are fed will make an attack upon other hives whether they are fed or not. The neighboring bees also came in for a share; so I find that, unless some means can be devised to prevent those aggressions, my bee feeding will prove a very unprofitable operation. I will describe my mode of feeding: My hives are plain, square boxes with a division a little more than a third of the distance from the top, for the purpose of inserting the honey boxes. The feeders are square tin boxes which hold half a gallon of sirup with a floating bridge on the liquid, where the bees alight and suck it through apertures made in the bridge for that purpose. The feeders are placed against the sides of the hive, through which holes are made for the bees to pass, the whole being covered by tightly fitting boxes. At first I put the feeders under the hives, but as I found the bees extended the comb from the hive down into the feeder, I was compelled to adopt the other mode for want of knowing a better way. Should the sirup be boiled or merely dissolved in cold water? If you can give the information desired in your next issue, you will confer on me a favor.

Yours, J. L. HUMPHREYS.

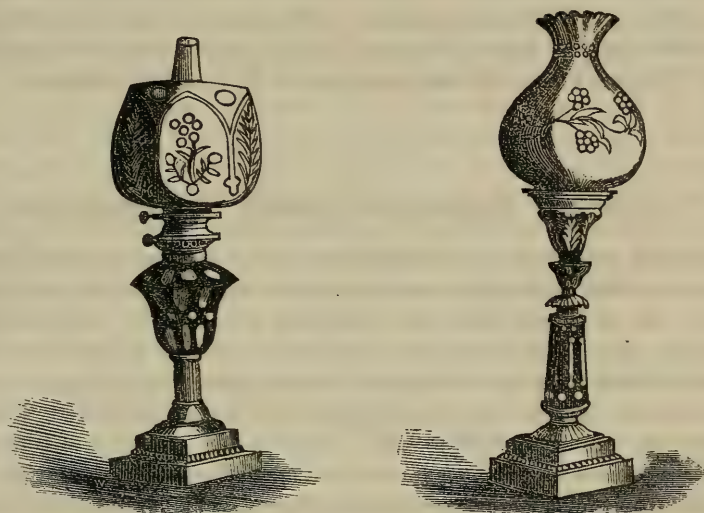
OUR PLAN OF FEEDING.—We have made bee feeding a business, and one attended with profit. Our mode was quite similar to that of our correspondent, in some respects, in others, differing somewhat. We made our feeding troughs of tin not more than two inches deep, and only sufficient for a day's food. Upon the sirup a thin perforated float of maple or other sweet wood was placed that filled the tin, but allowed of its settling down as fast as the sirup was taken away. The tin should be placed in rear of the hive, opposite to the ordinary entrance, and a few small holes made at the proper height to enable the bees to pass over the edge of the tin on to the float. The tin or trough should then be covered with a coarse wire gauze that prevents all access to the sirup except from the hive, and through which the sirup can be replenished from day to day, without disturbing the tins or the bees that may chance to be feeding. Over the whole should be placed a small box of any description, to darken the feeding tin and keep off all outsiders.

By this mode, no bees but such as belong to the hive can get at the tins; nor do they know the feed is there. Of course the boxes for darkening the tins are removed for a few moments at any time when necessary to replenish the feed.

The cause of your bees from one hive robbing those of another, doubtless had its origin in the fact that your feeding troughs were at first exposed in such a manner as to permit bees from other hives than the ones intended to be fed gaining access thereto; and, supposing that they were really robbing others of their legitimate sweets, followed up the business even to the entering of the hive for the regular made honey. We know of no better plan to save a weak swarm from being robbed after the business has been once fairly commenced, than the removal of the weak swarm to a distance from the robbers; give them new quarters in some part of your garden or grounds, and a few days will often suffice to make the aggressors forget their dishonorable propensity.

We would remark in reference to honey made from loaf sugar sirup entirely; it will sometimes crystallize in the comb to some extent, which is, by some, deemed an objection. This can be prevented by the addition to the sirup of a very small quantity of lemon sirup or juice; as the presence of a small quantity of any acid in sirups effectually prevents their crystallization. Care must be taken, however, not to add so much as to make it offensive to the bees. The sirup of the Chinese sugar cane, so difficult to crystallize on account of the presence of a slightly acidulous principle, is an admirable material for feeding bees. There is nothing gained by boiling the sirup, as it can be made thick enough for the bees to eat without it. Our plan was to keep a quantity of water standing upon more sugar than it could possibly dissolve, and being frequently stirred; and the sirup, when made, poured from the top of it.

A taste of rose, or wintergreen, or orange, or other ingredient can, to some extent, be imparted to the honey, by tincturing the sirup with the flavor desired. The difference in the flavor of honey made from white clover, buckwheat and other flowers, is clearly perceptible.



HALE'S PATENT KEROSENE BURNER.

OUR attention having been called to the new and beautiful light from the combustion of kerosene or coal oil, now for the first being introduced into our state, we have taken no little pains to enquire carefully into and examine the merits of this so-called unequalled light; unequalled, because giving more light at less expense than can be produced from any other known material.

That kerosene possesses the properties to produce the light, will no longer admit of a doubt; but a great deal of time and ingenuity have been expended in endeavoring to construct a suitable lamp or burner—one that would not only be economical in its combustion, but at the same time, effectually consume the smoke, or rather produce a brilliant light and pure flame without smoke. This most important property in all lamps has been secured in the invention known as Hale's patent kerosene burner.

Its excellence consists in the peculiar construction of the wick tube and its attachments, which are entirely new in principle and effectually secure the great desideratum so long needed—a brilliant yet cheap light, and a lamp free from all danger from explosion. There can be no explosion or sudden combustion as with camphene or burning fluid; it is essentially an oil from coal and nothing more, and no more explosive or combustible on the direct application of flame than any description of whale oil.

So great has been the demand for the oil on the Atlantic side since the introduction of Hale's burners, it could not be manufactured fast enough to meet the call for it, and a spurious oil has been manufactured and sold as genuine, though inferior and, wholly unfit for Hale's or any other burner; and which, in many instances, has led to a belief that neither the burner or oil were what they were reputed to be.

Consumers should be careful to obtain Hale's burners and the genuine coal oil of Bragg & Co., at 200 Washington street, San Francisco, or 104 J street, Sacramento. An infinite variety of lamps, of beautiful patterns, can be obtained on application as above. Bragg & Co. are the sole proprietors of the patent for California.

COUNTRY FAIRS AND THEIR ASSOCIATIONS.

A SHORT time since, in republishing an essay on the importance of district sale fairs, we took occasion, in some measure, to express our own views upon the subject. The favor with which our suggestions were received induced us again to recur to the topic. The great want in all our agricultural districts is association—a center or stand point on which men of all sects, politics and shades of opinion may meet in mutual interest. Our farming lands are yet too sparsely settled, and rural population too much scattered to admit, except in rare instances, of farmers' clubs and debating societies, or the lyceums and reading clubs of older communities. There is no interchange of experience or opinion beyond the immediate neighborhood of adjoining farms. Each man's experience is his own hard teacher; each man's difficulty in fortune is his own; the rocks that wrecked him are not marked in any agricultural chart, nor the better management which gave him success made known to pilot others. Thus, without any intentional selfishness—for our farming community is as liberal as any on earth—the virtues of public spirit and intelligent communicativeness are not being cultivated, and the good fruits of experienced, skillful culture spread forth to enliven the toil and become beacons of hope and safety to the new beginner. This is all wrong, and must be remedied. Our teachers and mechanics meet in social convention for mutual interest and instruction. Our merchants discuss their interest in the chamber of commerce, and add to their stores of knowledge in their well stored library, ensuring quick sales and fair competition in their daily walks on 'change. Our farmers need the same stimulus and interchange of opinion; the same rasping of intellect—a harrowing up of agricultural ideas until a fine tilth of agricultural and social progress is introduced throughout our growing state.

We believe no scheme could be presented so beneficial to each farmer's individual interest, or would so soon achieve this result, as the establishment of periodical sale fairs in our larger country towns. Farmers' clubs would then be formed, and after the regular business of the day was over, kindred topics would be discussed, comparison of products of different localities would be made, the specialty of each would be clearly defined, and none but the blind would leave the fair without clearer ideas of their own business and products. Our state and county annual fairs are, in a slight measure, having this effect, but are altogether too infrequent for such great purposes, and with their programme scattered over so much time, it is with difficulty the great mass can command such home absence or means to visit them with justice to themselves. For all such the sale fairs will be the exact magnet of attraction,

within whose scope they come in the line of legitimate business, without loss of time in either seeding or harvest.

There is no old country custom which, if introduced, would be of more general convenience to the agricultural sellers and buyers throughout our state; none that would more generally facilitate the transaction of many branches of business. It is to be hoped the officers of our state and county agricultural societies will give this matter consideration, and invite discussion of its necessities and convenience at their annual meetings, for we opine once this subject is brought fairly before our farmers, they will vote such a weekly or monthly gathering of sellers and buyers of too great importance, and too economical in time to be longer foregone. In them we see nought but benefit, and just the link wanted in our chain of social and productive progress.—*Alta California.*

GROVER & BAKER'S SEWING MACHINES.

WHAT WE THINK OF THEM.

A GREAT deal has been said and written in regard to the merits of the different rival sewing machines; so much so that we have been at a loss to know what we ought to advise the many who have asked us, which machine they should buy. We now say that we have carefully examined the Grover & Baker machines, at the depot, 118 Montgomery street, with a view chiefly to satisfy us in regard to their superiority, as claimed, over all other machines in use. We find it an almost noiseless machine; this was the first peculiarity we noticed—as it is worthy of note. Then we were shown the peculiarity of the stitch, and its fitness for the most firm as well as open fabric; and the fact that it cannot unravel and that the seam is of itself even more elastic than the fabric sewn, cannot but place its efficiency over all other machines not possessing this indispensable requisite of a first class sewing machine.

Next we were shown how perfectly the machine is adapted to family use, being just as well suited to operate upon the coarsest bagging or canvas, as the finest muslin; and the ease with which the change is made from one to the other, and the extreme simplicity of the operation, as well as of the machine itself, to our mind is all that has ever been claimed for it.

It takes the thread in sewing directly from the ordinary spool; will stitch, hem, fell, gather and embroider; in fact is a perfect machine, that in our opinion will give entire satisfaction to the purchaser.

They are an ornament even to the parlor, they lighten the burden of domestic cares, promote health and long life, and what is all important nowadays, will put money into the pocket of the possessor.

A new invoice is just now received, beautiful in pattern, and ranging in price from seventy-five dollars to one hundred and fifty dollars. We can hardly imagine how seventy-five dollars can be invested to better advantage, by any one in want of the great labor saving machine of the age, than in the purchase of one of Grover & Baker's unrivalled sewing machines.

Editor's Repository.

OUR pages for August present a widely varied range of topics, for the consideration of the reader. Several communications appear that cannot fail to interest the cultivator of California fruits, trees, plants and soils. We have commenced the publication of an essay on "Grape-growing and Wine-making in California," written by Col. Haraszthy, of Sonoma, for the State Agricultural Society's Report for 1858, which will be found interesting and instructive to the growers of the vine; and as all the information possible to be obtained is now needed by the vast numbers of novices in wine-making in our state, the natural result of a greatly extended vineyard culture, we have given "Grapes and Wine, number two," as likely to interest many. An excellent article on the "Cultivation of Madder" appears as an editorial; but which is the contribution of a gentleman of Sacramento, who writes from personal knowledge.

"Mountain Fruit-Culture," by RIVERSIDE, and his views in reference to high and low training, stirring the surface soil, irrigation and the training of vines on or near the surface, are worthy of special consideration.

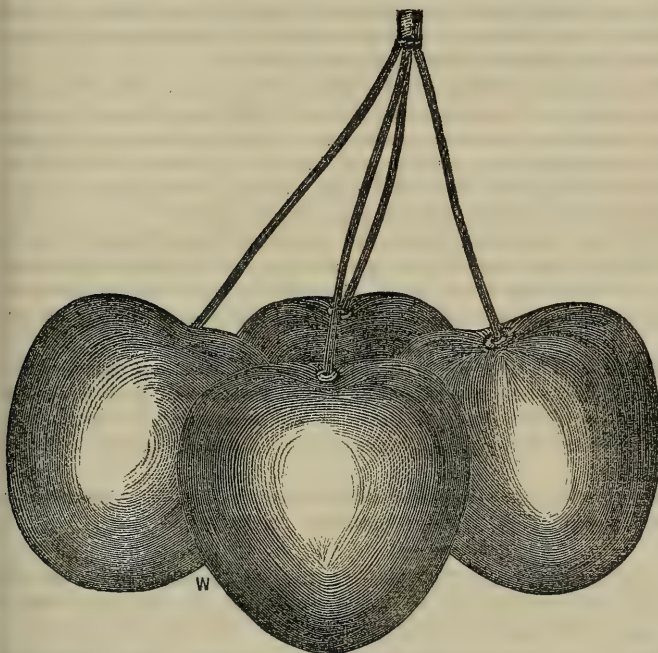
"How an Orchard was Planted," tells the story exactly, and shows to our mind that deeply running roots are no detriment to a California grown tree.

A startling fact, by "ANTHRAX," in regard to our bay climate for peaches, may possibly require a little looking after. Oakland and Alameda have produced some fine peaches, and we think other places around our extensive and beautiful bay.

Though nearly a month later than usual, on account of the coldness of spring and early summer, the varied fruits of our fields and gardens are now pouring into our markets, unsurpassed in beauty, size and quality every way, by that of any previous year.

An unusual interest is felt throughout the state this year in reference to the success of the several agricultural and horticultural fairs, state and county, which are advertised to take place at their respective localities at times that will cover almost if not quite every day or week from the last week in August to the middle of October. It speaks well for the agricultural advancement of the state and cannot but prove highly beneficial to that great interest which is the pride of every country possessing it.

FRONTISPIECE.—We give an engraving this month of a specimen bunch of the Lawrence's favorite plum, from the gardens of Mr. A. W. White, Oakland; the size of fruit, form of bunch and number of plums being strictly retained in the engraving. The specimens are not as large as are often produced where the fruit is thinned out, as it is an exceedingly prolific variety. As a variety, it is more than medium size, skin a yellowish green, and when deprived of its bluish green bloom, shows streaks of a darker green beneath the skin. Flesh green, and is often mistaken for the green gage, but is entirely another plum. Ripens here, in ordinary seasons, about the twentieth of June; is therefore an early plum; it has a rich, vinous flavor, and a truly delicious and valuable fruit.



BIGARREAU.—This fine cherry which during the present fruit season has appeared in considerable quantities in our markets, more than maintains its reputation as “the king of cherries.” In point of size there is nothing in the catalogue of cherries that can equal it; whilst in point of flavor and firmness of flesh it is unsurpassed. By far the greater part of the supply of this variety in market was sent here from Oregon and readily brought one dollar per pound retail. The firmness of the flesh of this variety, and its productiveness, render it one of

the best for market purposes, and should be extensively cultivated. Our engraving represents the exact size of the specimens from which the drawing was taken.

MONTHLY JOURNAL OF THE CALIFORNIA STATE AGRICULTURAL SOCIETY.—Numbers three and four of this interesting serial came promptly to hand, and we find in it, as usual, much to interest the friends of agriculture. The Corresponding Secretary, in reference to the progress made in the erection of a building for the purposes of the fair, says:

“After advertising for proposals to build the new agricultural hall, the bids all ranged above the means at the disposal of the Board, whereupon several modifications in the plan were adopted, and after several failures to complete a contract with other parties, one was arranged with Mr. A. Henley, to construct a building, having a front of one hundred and eight feet on M street, and a depth of one hundred and forty feet on Sixth street, the first story fourteen feet, and the second thirty feet in the clear, for the sum of \$21,000.

“The premium list and rules have also been published, offering over \$12,500 in cash; and plate, medals, etc., sufficient to swell the gross amount to over \$15,600, together with the general rules and regulations for the fair.

“It has also been resolved to publish large posters—circulate the premium list in convenient form—travel in different portions of the state, to impart information and elicit general interest for the fair of 1859, which now promises to excel any one the society has ever held.”

The *Journal* also contains the list of premiums to be awarded at the approaching annual fair, more extended than ever before offered and altogether too voluminous for our columns; it will be circulated, however, extensively and gratuitously.

The people of our state seem more awakened to the interests of agriculture and the arts, and a desire to improve in every department, than ever before; and we are satisfied from the alacrity with which all classes of the industrial interest respond to the wishes of the visiting committee, to

bring out for exhibition at the coming fair the finer specimens of their skill, that the fair, to be held in Sacramento, commencing on the thirteenth of September, and to be continued ten days, will be superior in point of interest and attraction to any one that has preceded it.

The visiting committee, consisting of Messrs. O. C. Wheeler, J. H. Nevett, J. S. Silver, John Center and T. Ogg Shaw, during ten days ending twenty-second of July, called upon the proprietors of upwards of one hundred and seventy-five establishments in this city alone, and fully nine-tenths have agreed to do something to enhance the interest of the fair, by exhibition of their manufactures or the articles in which they deal. There will be steam power provided at the exhibition rooms, for the use of those who may wish to exhibit their machinery in motion.

The hall consists of two large rooms, each one hundred and twenty by one hundred feet; the upper room of the two is entirely unobstructed by any pillar or support to the roof above whatever, and is the largest room of its kind in the United States. Just what we might expect of California. Besides these, there are six smaller rooms, admirably planned and arranged for the uses and purposes of the society.

Any information that may be desired, by parties in this city, relative to matters connected with the State Fair, can be obtained by calling on J. S. Silver, Esq., at International Hotel, or on John Center, Esq., at his gardens near the Mission. The Corresponding Secretary, O. C. Wheeler, Esq., Sacramento, can also be addressed upon any subject connected with the State Agricultural Society or its approaching annual fair.

The transactions of the society for 1858 are now published and will be ready for general distribution, among those entitled to receive them, by about the tenth of August.

CALIFORNIA HORTICULTURAL SOCIETY.—The regular quarterly meeting of this society was held in San Francisco, on Wednesday the thirteenth ult. The time of holding the third annual fair of the society, which had been set for twenty-third of August, was postponed to Tuesday, the sixth of September, in consequence of the lateness of the season in the ripening of fruits. Committees were appointed to take charge of the different departments pertaining to the decoration of the hall, the arranging of tables and products, as brought forward for exhibition. An amendment to the constitution of the society, making twenty-five dollars the sum entitling a person to life membership was adopted.

By this amendment, any regularly elected member, by the payment of twenty dollars, is ever after exempt from the payment of further dues, and is entitled to a certificate that admits him and his family to all the fairs of the society. It is hoped that many will avail themselves of this amendment, becoming life members of the society.

The executive committee has rented Musical Hall, in San Francisco, in which to hold the fair. Its decoration and the arrangement of the floral department, will be under the immediate direction of Mr. John Center. Abundance of room will be provided for exhibitors of fruits and all the products of the field and garden; and as the fair will be exclusively horticultural, and in connection with no other society in its exhibit, it is confidently believed that it will be liberally patronized by citizens of both city and country.

A fruit-growers' convention will be in session from 9 A. M. to 12 M. of Wednesday, Thursday and Friday during the fair, at which interesting discussions relative to the value of fruits for certain localities, their general qualities and adaptation to soils and climates, will be a prominent feature. The following will be near the programme of the convention: On Wednesday, the second day of the fair, the committee will be addressed by Wm. Daniels, Esq., of Santa Clara, and on following days by other gentlemen engaged in horticultural pursuits. Wednesday's discussion will be more particularly on culture and climate; Thursday, apples and peaches, and on Friday, pears and soft fruits.

The florists will also hold a convention at such time as may be hereafter designated. Fruit-growers unable to attend the convention, will aid the efforts of its members by forwarding lists of fruits that are found to do well in their respective localities, stating in their lists the qualities of soils and

method of culture. A full attendance is desired, as the young orchards of California have now sufficiently fruited to give index for future guidance.

We believe that the third annual fair of this society will be found to surpass in interest every thing of the kind that has preceded it in this state or any other. We give the society's circular and list of articles on which premiums are offered.

SANTA CLARA VALLEY AGRICULTURAL SOCIETY.—We have received from Wm. Daniels, Esq., President of the Santa Clara Valley Agricultural Society, the premium list, rules and regulations of the society governing the annual fair, to be held at San Jose, commencing on Tuesday, October 18th, and to continue four days. We have not room on our pages to give the entire list of articles on which premiums, ranging from one hundred dollars to twenty-five dollars and under, are offered; we give, however, the different heads under which the great variety of articles are enumerated, as follows:

For the best Stallions, Mares and Fillies, Trotting Colts and Fillies, Jacks, Harness and Saddle Horses, Mules, Bulls, Cows and Heifers, Herd of Cattle, Milk Cows, Oxen, Sheep, Hogs, Products of the Farm, Agricultural Implements, Harness and Saddlery, Leather, Vegetables, Embroidery and Needlework, Potters' Ware, Tin Ware, Baskets and Brooms, Millinery, Fine Arts, Orchards, Vineyards and Live Fences, Flowers, California Wines and Fruits.

We notice as a peculiarity that no second premiums are offered upon any class of articles except Fruits. None but the *best* of their kind can receive any award, except it be a special premium.

No notice is given of a plowing match—we conclude there is to be none. No mention is made of horse racing or the exhibition of ladies on fast horses; but without these, Santa Clara county can and will get up a fair that will be second to no other county fair in the state.

The county has the men, women and other animals and products to do it with, and the very liberal premiums offered by the society, and the interest there felt in the progress and improvement of everything pertaining to industrial pursuits, will be sure to bring them out. Wm. Daniels, of San Jose, is President of the society, and Chas. B. Younger, Secretary.

FAIR AT MARYSVILLE.—We have also received the premium list and rules of the "agricultural, horticultural and mechanics' society of the northern district of California," which society will hold its first annual fair at Marysville, commencing on Tuesday, the thirtieth of August, and continuing five days.

The geographical position of Marysville, in the heart of, and surrounded by an immense agricultural country, much of it admirably adapted not only to stock-growing, but to the culture of many of the finest fruits of our climate, cannot but furnish the material for a fair quite equal, in every respect, to the state fair of last year. We predict a success highly creditable to its officers and managers.

The officers of the society are: President, G. N. Swezy; Secretary, Chas. M. Gorham; Treasurer, J. H. Kincaid; Vice Presidents, J. S. Eshom, E. T. Wilkins, W. H. Parks, W. Henshaw, Chas. Covilland, E. B. Stevens, Benj. B. Bliven, Thos. Shannon, D. R. Gates, — Singletary, Joseph Boyce, C. Cooper, — Tower, Dr. J. R. Crandall, J. G. Doll.

We acknowledge the receipt of a "complimentary ticket," from the President and Secretary.

STONE WARE.—Beautiful specimens of home manufacture are on exhibition at the south west corner of Washington and Sansome streets. Stone ware of decided excellence, is now manufactured by Mr. D. Brannan at San Antonio, just across the Bay. The material for the same, for the most part, is obtained at Michigan Bar. Mr. B. also manufactures a superior article of fire brick. We would call the attention of Californians to the fact that these articles heretofore figuring extensively as imports, as such have received their quietus.

HOW TO CLEAN ALFALFA SEED.—Alfalfa seed has got a bad name, not because the grass is not all that is said of it, but because we cannot get the seed pure. Wild turnip and mustard seed are mixed with every pound that comes to us from South America, whatever dealers may say to the contrary. With this admixture alfalfa seed is worse than worthless. No mechanical contrivance has yet been given to the public that is of any value to effect separation. But lately, a shrewd observer noticing how imperfect shot are separated from the mass, was struck with the application of the principle to alfalfa. He placed a bucket before him, and set a smooth board, with one end a trifle below the inner rim of the same, letting the upper end rest against a chair. He poured his alfalfa seed upon the chair end of the board, when the turnip and mustard seed, being round, rolleypoleeyed down at a round rate, and finally leaped over the edge of the bucket to the floor. But the alfalfa seed, being flattish, glided along slowly and descended to the end of the board without over-leaping the bucket.

This is a grand idea, and it is a sure thing. Of course you will try awhile before you hit exactly the best angle and the right distance below the edge of the bucket or tub; but this is a small affair and readily achieved.—*Alta California*.

NOTES BY THE WAY.—*Editor Culturist*:—In visiting the charming little ranch at Mormon Island, belonging to Mr. J. A. Shaff, he called my attention to two apple trees, about five years old, of good size and thrifty appearance, which had upon them two crops of fruit. The first might be said to be a fair crop and good size, or about half pound apples. The second was much less abundant, perhaps not more than one-sixth as much as the first and about the size of small walnuts. Mr. S. also called my attention to a small lot of trees which he brought from Sacramento and transplanted them into his orchard on the twentieth day of March last, and one of them had two good sized apples on it, and not less than six buds just ready to burst into bloom.

In the neighboring orchard of Mr. Colwins, situated in a lovely little valley, is a fine, large fig tree, very fruitful, having upon it figs of nearly full growth and of all sizes down to that of a pea. Both of these orchards are very fruitful and contain a great variety of fruit, and their graperies contain a large assortment of grapes, all of which bear abundantly.

But speaking of grapes reminds me of Mr. D. H. Taft's splendid vineyard—the largest and most flourishing in Folsom. He is turning his attention principally to grape-culture, and seems to have been fortunate as to the selection of his grounds. The vineyards of the foot-hills of the Sierras are destined, ere many years, to bear away the palm in the production of all the choice wines. The grapes, if not quite as large, are more highly flavored, the juices more concentrated, and possess more of the elements of a superior wine than the watery product of the lower alluvial valleys.

R. H. C.

ERRATICISMS.—*Editor Culturist*:—I send you a few erraticisms delineating something of pomology, mining and stock in this portion of the state.

At Long Bar, on the Yuba, fourteen miles from Marysville, the garden of B. F. Horche, contains fine specimens of peach, cherry and apricot trees, three years of age, all in good fruit; the soil is red clay, and the grape is here growing luxuriantly; it is irrigated from a ditch of one of the water companies. Mr. Horche is now on his way across the plains with a number of choice stallions.

About a mile from Long Bar, the young orchard of Mr. J. L. Armstrong is worth an hour's examination. It is situated in an indentation of the hills, and besides the various standard fruit trees, is well supplied with all the kinds of vegetables the market demands. A really superior article of Port wine, from elderberries, is manufactured by Mrs. Armstrong, equalling in flavor much of the imported. A garden connected with the Union Hotel, and owned by J. Krause, is an oasis and will, in a few years, excel many of more favored localities, as the proprietor is a skillful culturist.

Judge McKenzie's garden has much of the useful as well as ornamental and his intention is to improve, from year to year, both the quality and quantity of trees, vines and vegetables. Here I

measured corn, of the yellow dent variety, eleven and one-half feet in high—not a single specimen, but an average of the lot upon the ground. [But how about the ears? Ed.]

At Timbuctoo the garden of Patrick Quigly is one that will attract much attention; the soil is only two feet in depth, underlaid by bed rock, yet upon it is grown many rare and beautiful specimens of floriculture, and it embraces everything that an orchard can boast down to the varied production of a kitchen garden. One specimen of Los Angeles grape, planted April 25th, 1858, now contains six bunches of fruit; while the yellow rareripe peach, of April 28th, 1858, is perfectly loaded with fruit, and in clusters worthy an engraving.

The grapes of W. M. Boyd and Mr. C. H. Bushwell give evidence of good taste and careful culture. In these as well as in the one before mentioned are fine specimens of the cypress vine; the fruit trees grow well despite the impenetrable bed rock, and the only question with the owner is the most scientific mode of irrigation, which, in my opinion, is that of Mr. Quigly, a sort of percolating method, as adopted at Smartville.

The Excelsior and Tri Union Waterworks are worthy of an extended notice, which is in preparation for September number. At this point the geologist may obtain curious specimens of crystallizations and petrifications, of which Mr. Carpenter has a valuable collection, and which he is constantly augmenting.

EMPIRE RANCH.—The garden of Moony & Moody, of the Empire Ranch, still retains the high character given it in number one of volume one of the *Culturist*. Peaches and apricots are flourishing, and pears that are indescribable and can be appreciated only by the sight; one tree contains a cluster that will be worthy an exhibit, and an engraving for any horticultural work.

With regard to stock, a bay horse colt, of three years, sixteen and one-half hands high, of the Messenger and Tiger whip, owned by Messrs. M. & M., is the representative of a race of horses that will make their mark in the annals of the turf, either upon the course, the road, or as work horses. He is one of a race, of which there are thirteen horse colts in Santa Clara county, sired by a Tiger whip horse since dead, and is equal to any of his race in any part of the country. Having seen several of his relations, it would not be presumptuous to say that, as a race, they will compare favorably with any of the stocks now in California, and for crossing with fine limbed American or Spanish mares, are better than horses of higher pedigree, as they possess muscle and weight, which is the desideratum of our stock-raisers, at the present time, in horses as well as cattle. It is only by regularly graded breeding that fine animals can be obtained.

EMPIRE RANCH, July 18th, 1859.

J. B. M.

RED ASTRACHAN APPLE.—We must notice one fact in connection with the growth of that superb variety of apple, the Red Astrachan. Dr. H. Haile, of Alameda, had, during the last autumn and winter, a considerable number of young trees of this variety in nursery rows, and from which he sold every alternate tree in the row at prices averaging one dollar to the tree; nothing remarkable in this particularly; but in what follows, there is; several of the trees left standing in the nursery rows have produced fruit that, on being sold at the regular market prices, brought six dollars to the tree. If trees, two years old, in any other country than California can do this, in the nursery row, we would like to hear where they are. It might be an object to emigrate.

FRUIT FAVORS.—Gentlemen whose names we use in this connection, will please consider that to them—coupled with a most respectful vibration of our cranium—we touch our hat.

The finest, because the largest and handsomest, single bunch specimen of the British Queen strawberry that California has produced the present year, beyond all question, was presented to us last week, by Mr. W. F. Boardman, fruit culturist of Oakland.

Specimens of the Lawton blackberry and Red Antwerp raspberry, that no other country than Oakland can even imitate, were profusely spread before us, from the famous fruit gardens of A. W. White, Esq. We also took a ramble for an hour over his grounds and among his fruits and berries, a description of which, to do full justice, requires an abler pen than ours.

From Mr. Shillito, of Freeman & Co's Express, we have received as the product of the garden of Mr. Geo. Flint, of Rough & Ready, well, what shall we call it? not a stock of corn with one, three, five or a dozen ears on it, but a cluster of ears, thirteen in number and all closely joined in one at their base. A remarkable and singular freak or sport of nature.

Should you be in want of the finest apricots, strawberries and other fruits of the season, or desire a purchaser for all manner of farm and garden products, call on J. Bryant Hill & Co., 63 Merchant street.

OUR ADVERTISEMENTS.—With a circulation of nearly two thousand copies of the *Culturist*, and far the greater part among the farmers of every county, from Los Angeles to Siskiyou, it is natural enough that the few advertisements we permit to accompany our forty-eight pages monthly, should be read and reread; and so they are. Our advertising friends are satisfied with our prices and the benefit they receive.

We puff no man's wares or advertisement; but calling attention to them, we deem a perfectly legitimate matter, because many times greatly benefitting the reader. Thus we would ask our horticultural friends and vegetable-raisers to turn to the card of John B. Taylor and there learn to whom they will do well to consign their products. He is doing the *business* of the city in his line.

J. Bayant Hill & Co. have the fruits, butter, eggs, cheese, poultry, etc., every day fresh from the country and reliable. There is something said in their advertisement about consignments that will do to notice.

We might say something of the Grover & Baker sewing machines; but there are none to be had just now; the agent, R. G. Brown, has sold them all; but a fresh consignment is daily expected to arrive. [Received and now opening, July 28th.]

Wheeler & Wilson's sewing machines require no notice at our hand. People will have them, say what we will about them. H. C. Hayden, agent.

Singer's sewing machines are able to sing their own praises; they need no mention from us, other than to say, see their advertisement set to music, by J. H. Dunnell, Esq.

SIXTY-THREE TO A FOOT.—We are in receipt of an apple tree limb one foot in length, on which are clustered no less than sixty-three apples, about the size of English walnuts. It is but one of similar laden limbs from a tree only three years old, in the garden of Mr. John Staples, Grass Valley. It is a remarkable and beautiful specimen of the prolificacy of California fruit trees.

RETAIL PRICES OF FRUITS.—We give the prices at which the staple fruits of our state are sold in the city of San Francisco at the present date, July 28th. From the prices obtained at retail, the producer can judge whether he is getting a fair price for his products at wholesale. Apples are selling at twenty-five to fifty cents per pound. Early Strawberry Red Juneating and the Red Astrachan are the varieties. There is an inferior seedling apple, of no value but for cooking, that can be bought at fifteen cents per pound. Apricots are bringing from twenty-five to fifty cents per pound, according to quality; the peach apricot is the most plentiful and the early golden brings the best price. Red rareripe peaches and early Tillotson are bringing from twenty-five to fifty cents per pound. Of pears, some four or five varieties are on sale, worth from fifteen to fifty cents per pound. There is quite an abundance of plums and yet they are bringing high prices. From fifty cents to one dollar and twenty five cents per pound, is the range for this fine fruit. Coe's golden drop and Lawrence's favorite, are the most abundant; but the most valuable kind, because bringing the highest price in the market, is a variety on sale from the gardens of Dr. H. Haile, of Alameda; we are not certain as regards the name of this variety. Strawberries are yet quite abundant and are bringing twenty-five cents per pound. Raspberries about equally abundant at the same price. Muskmelons are selling at five dollars per dozen, and from fifty cents to seventy-five cents each. Watermelons are bringing from fifteen to twenty-five cents—supply abundant.

METEOROLOGICAL TABLE,

For Sacramento, California; being an abstract of Observations made during the month ending June 30th, 1859; Lat. 38°, 34', 41'', N.; Long. 121°, 27', 44'', W. Hight of the lower surface of the mercury, 41 feet above the sea at San Francisco. The observations are made three times a day conformably with the hours adopted by the Smithsonian Institution. The indications of the barometer are given corrected for capillary action, and reduced to the temperature of 32° Fahrenheit, but not corrected for its hight above the sea level. The rainy days are included under the head of cloudy and foggy, and are also put separately to show the number of days on which ain fell during the month. The force of the wind is estimated and registered in figures from 0 calm to 10 a hurricane.

By THOS. M. LOGAN, M. D.

JUNE, 1859.	7h. A. M.	2h. P. M.	9h. P. M.	MONTH.	AVERAGE OF SEVEN YRS.
Barometer, Maxima	30.211	30.161	30.074	30.211 inches.	+ 0.062 inch.
“ Minima	29.614	29.613	29.605	29.605 “	— 0.018 “
“ Mean	29.863	29.832	29.813	29.836 “	— 0.020 “
Thermometer, Maxima	79.00	96.00	88.00	96.00 deg.	+ 3.40 deg.
“ Minima	61.00	70.00	62.00	61.00 “	+ 1.60 “
“ Mean	70.00	87.86	72.70	74.85 “	+ 2.88 “
Force of Vapor, Maxima .....	.664	.942	.731	.942 inches.	+ .145 inch.
“ “ Minima .....	.343	.296	.322	.296 “	+ .062 “
“ “ Mean .....	.485	.502	.522	.503 “	+ .031 “
Relative Humidity, Maxima	82.00	73.00	76.00	82.00 per ct.	— 1.67 p. ct.
“ “ Minima	54.00	18.00	42.00	18.00 “	— 2.25 “
“ “ Mean	66.27	47.17	65.10	59.51 “	— 1.56 “
Number of Clear Days	20	20	22	20 2-3 days.	+ 1-3 days.
Number of Cloudy and Foggy Days.	10	10	8	9 1-3 “	— 1-3 “
Number of Rainy Days					
Quantity of Clouds	0.5	0.6	0.5	0.5	— 0.8
Quantity of Rain and Fog					— 0.079 inch.
1st Days and 2d, Force of N. Wind..	3 1.7	6 1.3	0 0.0	3 1.0	+ 1 — 0.2
“ “ N. E. Wind.	4 1.2	0 0.0	0 0.0	1 1-3 0.4	+ 2-3 — 0.8
“ “ E. Wind.	2 1.0	0 0.0	0 0.0	2-3 0.3	+ 1-3 — 0.1
“ “ S. E. Wind.	5 1.6	0 0.0	3 1.7	2 2-3 1.1	— 1-2-3 — 0.9
“ “ S. Wind.	11 2.0	7 2.3	15 2.4	11 2.2	+ 2 1-3 — 0.1
“ “ S. W. Wind.	4 1.8	8 3.0	8 0.8	6 2-3 1.7	..... 0.3
“ “ W. Wind.	1 1.0	3 1.3	4 1.8	2 2-3 1.3	+ 1 — 0.1
“ “ N. W. Wind.	0 0.0	6 2.0	0 0.0	2 0.7	— 2 1-3 + 0.8

Thermometrograph.

	DEG.		DEG.
Highest Reading by day on the 22d	102.00	Mean of all Highest Readings by day	84.87
Lowest Reading by night on the 4th	51.00	Mean of all lowest readings by night	61.30
Range of Temperature during month	51.00	Mean daily range of Temperature during mo.	23.57

REMARKS.—Notwithstanding the high maximum reached, during the heated term of the past month, exceeding that of any period, by fifty-hundredths of a degree, as measured by the same standard, during six years, we do not find much variation in the mean temperature. As in the greater part of the temperate latitudes, there obtains here also a regular curve of differences in the successive months of the year—January being the coldest and July the hottest month. This curve is generally sharpest during the spring and fall, and has heretofore described an average difference of about seven degrees between May and June. The present season offers no exception to the rule. The reason why the heat was so severely felt here, at one time, is to be found in its sudden accession, and the large proportion of moisture in the atmosphere—instrumentally proved by the psychrometer. Heretofore the maximum of the summer heat has always been reached in the month of July, during the most arid season, when there is but little aqueous vapor in the atmosphere; whilst during the nights of the 20th and 21st, when the highest reading by day was ninety-nine degrees, the difference between the wet and dry bulb thermometer was not more than from six to eight degrees at 9 P. M.—the mercury in the latter at that hour standing as high as eighty-two degrees. From the fact of the temperature having ranged so high thus early in the season, and of July having invariably proved to be our hottest month, we have some reason to argue a very hot summer, which may compensate for the extreme and prolonged cold of the past winter, and thus bring up the mean temperature of the year to its standard.

BEES.—We have ten hives of bees in excellent condition, that we will sell if we can get one hundred dollars a hive for them. If not, we will keep them and average four new swarms from each hive, the next year. Every good swarm of bees, in a favorable locality, will make from thirty to forty-five pounds of surplus honey a season, and it has thus far sold at one dollar per pound in San Francisco. Who wants bees?

INSURANCE.—There is nothing like being insured against loss by fire, in a country so subject to this dire calamity as is California. McLean & Fowler, in San Francisco, offer to insure almost any description of property, and in any part of the country, against loss by fire. For particulars, and now, just before you lose your well stored garner, turn to their advertisement and read.

CALIFORNIA HORTICULTURAL SOCIETY'S CIRCULAR FOR 1859.

THE FIRST AND SECOND ANNUAL FAIRS of the CALIFORNIA HORTICULTURAL SOCIETY, having more than equalled the highest expectations of their projectors, the officers and members of the Society are encouraged to still further efforts to advance the horticultural interests of the State, by presenting the incentive of a Third Annual Fair.

The Third Annual Fair of the Society will be held in the City of San Francisco, commencing on **TUESDAY**, the 6th of September, 1859, at six o'clock, P. M., and continue four days.

The object of the Society being to foster and encourage all departments of scientific and practical Horticulture, we invite the aid and co-operation of all who feel interested in the growth and perfection of tree, plant, fruit or flower, to help make the Fair alike creditable to the Society as well as to the industry, taste and skill of the horticulturists of California.

The acknowledged benefits that always accrue to communities, societies and individuals from public exhibitions of the products of their industry and skill, and the mutual good feeling engendered by these annual gatherings of our intelligent cultivators, should be a sufficient inducement, aside from the very liberal premiums heretofore awarded, to call out the active co-operation of a largely extended list of new members.

Any person to be a member of the Society, must pay a fee of five dollars annually, which entitles himself and family to free admission to all the exhibitions of the Society, and permits him to compete for premiums in any and all departments.

The committees of award, or judges, will be selected with special reference to their ability to judge correctly and award impartially.

All articles on exhibition for premiums, must be in place and properly arranged by three o'clock, P. M., of **TUESDAY**, the first day of the Fair.

No exhibitor's name will be attached to his articles until after the awards are made up by the judges, which shall be completed before six o'clock, P. M., on **TUESDAY**, the first day of the exhibition. The afternoon of Tuesday, until six o'clock, will be exclusively devoted to examinations by the judges, during which time all visitors and all exhibitors—except such as are invited by judges, for purposes of explanation—will be excluded.

The Society will provide every facility in its power for the safety and preservation of all articles on exhibition, and will be happy to receive contributions and display them, with the names of contributors, at any time during the Fair; but no exhibitor will be entitled to a premium unless his articles are on exhibition and in place before three o'clock, on **TUESDAY**, the first day of the Fair.

The Society will also be happy to receive and exhibit contributions from persons who may not be able to be present. Any such articles, forwarded by the California Steam Navigation Co., the Pacific Mail Steamship Co., or other transportation companies, labeled "For the Horticultural Fair," and directed to the "care of W. Wadsworth, Secretary, San Francisco," will receive due attention; and any instructions accompanying the same will be carefully regarded.

The citizens of neighboring States and Territories are cordially invited to exhibit, under the same rules and regulations as those of our own State.

The Convention of Fruit Growers will be held from nine, A. M., to twelve, M., during each day of the Fair.

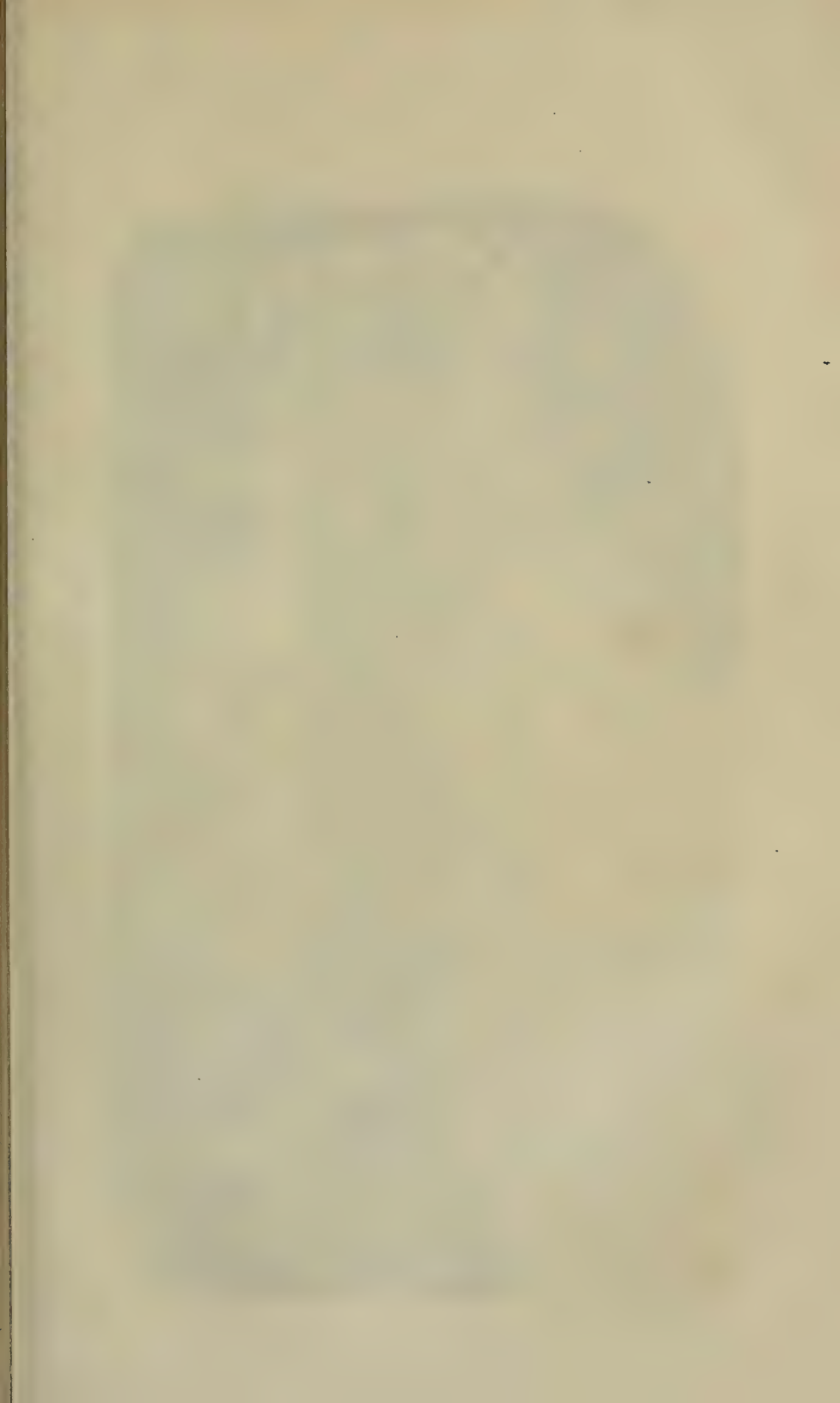
The co-operation of kindred Societies is invited.

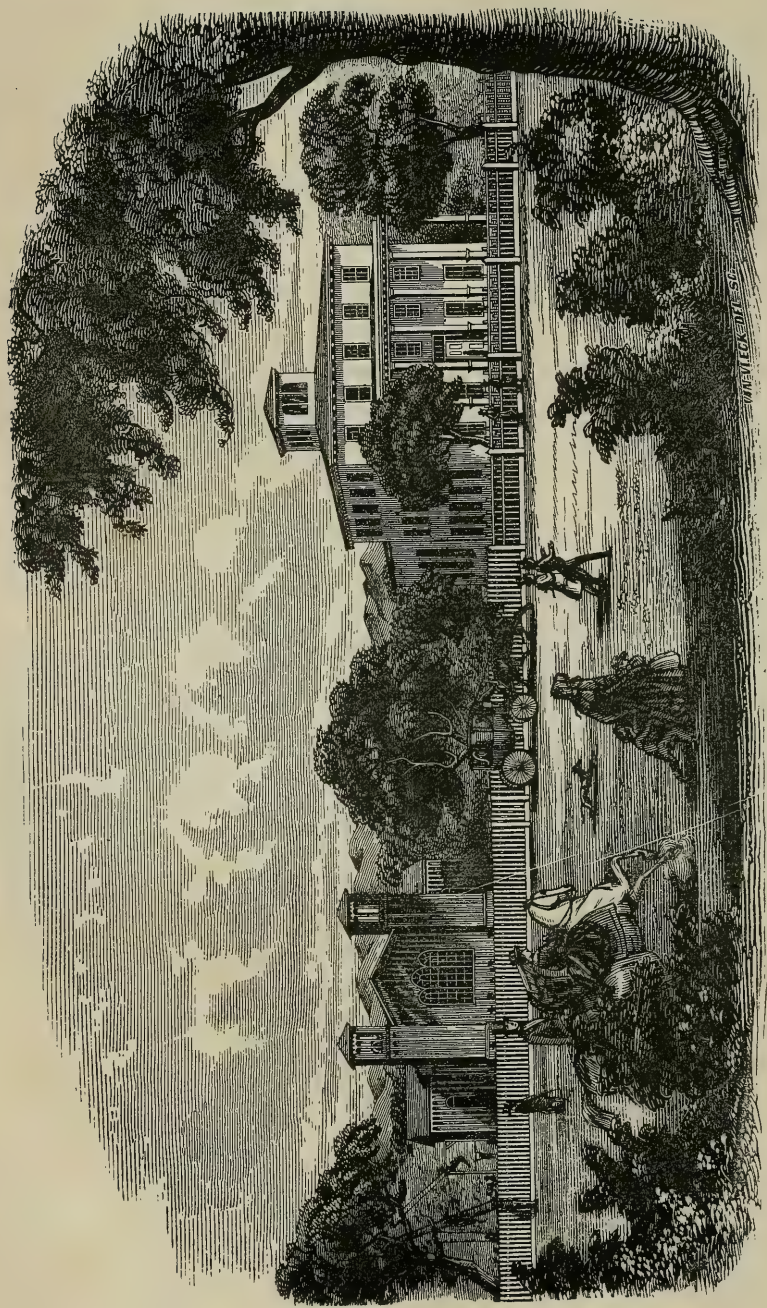
EDITORS throughout the State, will aid the horticulture of California by giving publicity to our intentions. We invite their attendance, and correspondence with our Secretary.

At the close of the Fair all articles of exhibition not otherwise ordered, will be sold for the benefit of the Society only.

Per order of Executive Committee.

W. WADSWORTH, Secretary.





THE COLLEGE OF CALIFORNIA.

T H E
CALIFORNIA CULTURIST.

SEPTEMBER, 1859.

OUR AGRICULTURAL PROGRESS.

IT is not sufficient for the future of California to be able to say that we are annually adding to the breadth of acres devoted to the cereals, or that a large increase of the gross annual yield is apparent from the records of trade, showing an approach to that period when we shall become steady exporters of breadstuffs. We want to do more than this; we want, upon our new and as yet unexhausted soil, to practice a system of agriculture that shall not only enable the soil to yield its annual increase over the product of last year from an increase of acres, but we want those acres to remain as productive for our successors as we found them.

In no other way, or upon any other condition, can it be said we are practicing a perfect system of agriculture, as adapted to California, or a progressive agriculture. To enrich our pockets by a direct impoverishment of our acres, is a progress of extremely doubtful utility when applied to agricultural lands. We might, in a country in which the soil was valuable only for the gold it might contain, fill our purses even at the expense of a total loss of every portion and particle of soil, and feel that we were progressionists, rather than impoverishers of the country. But the agriculturist, the grain or stock-grower, who follows a system that is impoverishing his lands, lessening the quantity of grain or pasturage from year to year, though he may follow strictly in the path as marked out by the best and most scientific culturists of other lands, he yet lacks the element necessary to constitute him a true agricultural progressionist.

That the great body of our lands, devoted to the cereals, are annually becoming less and less productive, admits of no dispute. We are, then, upon a wrong track or system in some way; we are either plowing too deep or too shallow; sowing too much

seed to the acre or not enough ; covering it too deep or too shallow ; sowing too early or too late ; or we are cropping too severely and frequently, with too little return for the waste of those elements in the soil, that alone constitute its fertility ; and we are going on, from year to year, bringing new lands under cultivation, only to subject them to this same system of exhausting tillage.

It certainly becomes the true progressionist, then, in California agriculture, to consider well the appropriateness of the system he adopts ; for, however old and established it may be as the true practice in other lands, if it is found to be at fault here, by its certain impoverishment of the soils upon which it is practiced, it is not the true system for us.

Hence the fallacy of constantly ringing upon the same old changes to produce certain results. The English farmer comes amongst us, and in a column or more of a weekly paper, tells us how to raise wheat and a crop of turnips in the same year and add to the fertility of the soil, at the same time fitting it in the best possible manner for a succeeding crop the following year, and so on from year to year. Whilst the editor of some American newspaper, who never plowed or planted ten acres of grain land in his life, will devote his first and last argument, to prove that a system of summer fallow that shall permit the soil to lie dormant every alternate year, is the only practice suitable to a California soil and climate.

Now there is too much of discrepancy here for both systems to be right, without some further explanation. Something needs be said of the process of manuring, if practiced at all ; the kind, mode and season of its application ; for it is well known that the application of what are termed long manures, consisting, for the most part, of coarse, undecomposed vegetable fiber, are worse than useless when applied to many California soils, after the rains of spring are no longer serviceable in aid of their decomposition.

So that what a California agriculture needs, is not this or that man's opinion, formed upon the result of his former experience in the country from whence he came, but we want the result of a California experience, with a California soil and climate. Then, and not till then, shall we have entered upon anything like a system of true agricultural progress. Our state and county fairs should be made far more than they are ; the time and opportunity for discussing all subjects connected with the progress of agriculture. Essays should be read, and encouragement given to writers who, from practical experience, have made the subjects they treat upon matters of special personal investigation. This would tend greatly to the development of a true system, and the only one which can be said to be reliable and worthy of adoption ; all else is mere experiment, and may or may not prove to be an agricultural progress in the right direction. We are pleased to see that liberal offers in premiums have been made the present year, by the state agricultural society, for the best essay on the culture of the vine, the manufacture of wine, the culture and reclamation of tule lands, culture of alkaline soils, destruction of squirrels and gophers, and irrigation ; and we hail it as an auspicious omen of our state's agricultural advancement.

SUMMER FALLOWING.

Editor Culturist:—I notice in the columns of one of your city cotemporaries an article by RUSTICUS, on the summer fallowing of land as a preparation for a wheat crop. The article was prefaced by a few remarks from the editor, and he says: "Our readers must not suppose we join 'Rusticus' for a moment in denouncing 'summer fallowing' or rejecting it. Be it understood that 'Rusticus' pleads for 'rotation of crops' instead. This we agree to cheerfully. But 'summer fallowing' must *precede* this system, in order to prepare the soil; for we have not the summer showers, as in Europe or the Atlantic states."

Now in the above remark there is something perfectly inexplicable. He would not reject summer fallowing, and yet when Rusticus, instead of the fallow, would substitute a fallow crop—which, I suppose, is the editor's meaning when he speaks of a "rotation of crops"—he agrees with him cheerfully. In other words he would fallow his land by cropping it. The matter I wish to get at is this: the first of March, I will suppose, has arrived; I have a twenty acre field that I wish to prepare for sowing to wheat in the fall; now shall I submit it to a process of a naked fallow, plowing it in early spring, then again in May or June to destroy the weeds that the spring rains have started up, and then again at seeding time; or shall I, at the second plowing, which I would make by the first of May, sow the land to peas, and harvesting the crop—always a valuable one—two months thereafter, as effectually keep down the weeds as though it was a naked fallow, whilst I add greatly to the quantity of vegetable matter to be plowed in at seeding time, and rendering the soil mellowed than though it had been a naked fallow?

But the editor says "summer fallowing must *precede* this system in order to prepare the soil; for we have not the summer showers, as in Europe or the Atlantic states." Now, why it is necessary to resort to a naked fallow because we have not the summer showers of the Atlantic states, is past my comprehension. I have supposed that the summer rains, giving vitality to weeds and grasses throughout the entire of summer, if anything, was the best reason for naked fallowing, as the most sure means of their destruction; but here we are taught the necessity of naked fallow because we have not the rains. I only regret that I am not able to comprehend the editor's meaning, for doubtless he means something, and I would be as glad to avail myself of any useful hints he might impart as any other man.

I am also equally at a loss to understand what "Rusticus" can mean by this remark. He says: "But, sir, it avails little for any practical benefit, to condemn a system without offering a substitute for adoption; while I, therefore, recommend the total abandonment of 'summer fallows,' where the weeds are allowed to run to seed and to poison the land, I would venture to recommend a course of cropping, which I have followed with no small advantage. Plow up the wheat stubble, the moment your crop is off the land; sow thereon, broadcast, the 'six-week turnip;' when the turnips are sufficiently large, turn in your sheep, and feed them on the land *where the turnips grew*; as soon as the turnips are eaten, plow the land for barley, and sow

red clover with your barley; then, when the clover is high enough, after the barley is removed, turn your pigs into the field, and when they shall have eaten the clover crop, plow up and put in wheat on the clover lea."

Now am I to understand "Rusticus" as recommending this course of cropping as the best preparative process for lands intended for wheat, in a California climate? If not, why put it in such shape as to appear as though he would? Am I to believe that he has followed the practice he recommends anywhere in California? and if he has, will he have the least objection to allowing me to see his field that has been so managed? In the first place, a very large share of the wheat lands in this state cannot be plowed the moment the wheat crop is taken off; and if it was possible, neither the "six-week turnip" seed, or any other seed, would vegetate for months if sown upon the land. But suppose they would grow, we are told that as soon as the turnips are eaten, plow the land for barley. Now if I am not wrong in my calculation, one hundred sheep would eat the turnips from a given number of acres in, say four months; but four hundred sheep would eat them in one month; now am I to sow my barley and red clover in one month after the turnips are large enough to be eaten, or in four months; should it be sown in autumn, winter or spring?

In conclusion, I remark, I would like to see one single fifty acre field of wheat in California that has been subjected to this routine of culture—or even ten acres, or five acres. I do not believe it can be shown in the state. It smacks a little too much of old English systems as taught in their books and easily copied; and, without doubt, admirably calculated for an English climate; but to recommend the same system for a California soil and climate, expecting any one to follow it, is asking a little too much of an

SAN JOSE.

AMERICAN.

SUMMER FALLOW.

THAT a difference of opinion exists in regard to the utility of summer fallowing for wheat, is not surprising; but it is to be regretted that men cannot express their varied opinions, upon a subject that has plainly two fair sides to it, without speaking discourteously of those who differ from them. The article which precedes this, though evidently based upon a desire to obtain accurate information upon a subject of immense importance to the agriculture of California, has a vein of satire, or an attempt at it, which we would much rather it did not possess. But as it has something of merit with its faults, we have allowed it to appear with but one or two slight alterations in its phraseology, though none in its meaning.

Our correspondent, "American," is evidently opposed to the naked fallow, and would substitute some kind of summer crop as an ameliorator of the soil, and perhaps a fertilizer—and he is evidently in favor of a pea crop for this purpose. Now we do not believe that, in discussing the merits of summer fallow, we ought to adopt and propagate an opinion and mode which in practice is merely applicable to a ten or twenty acre field; but it should be such as we can apply to an unlimited number

of acres. There are many California farmers who raise from one hundred to five hundred acres of wheat; and would "American" expect, could he possibly hope to see his favorite pea crop occupying the whole five hundred acres? has he ever yet heard of such a field? and if proper for one acre is it equally so for the whole five hundred. If he would propose a pea crop to the small farmer, and not to him of many acres, he should say so; and give his reason, even then, why such crop is preferable to oats, barley, potatoes or root crops; for why peas? certainly a precarious crop, slow of harvesting and general management.

It is evident that "American," can quite as easily find fault with the mode pursued by others, as name a substitute or suggest a better mode. Thus, he expresses a doubt of the success of "Rusticus," in growing turnips upon a wheat stubble, and possibly he would not succeed in our soil and climate; but what would he do better? what course will he pursue with the stubble field the best to fit it for a wheat crop? Of this we hear not a word or see a line upon the subject; thus leaving us as much in the dark, as to his views of the proper mode, as though he had said nothing against the plan as proposed by "Rusticus."

We will take this opportunity to give our views of summer fallowing, and will try to be understood in what we say, lest we too, be charged with ambiguity. "American" supposes a case of a twenty acre field on the first of March; we will take the same or any number of acres, at the same season. He does not name the condition of the field, whether new or old ground, whether infested with the seeds and roots of native weeds and grasses only upon or near the surface, because never yet plowed, or whether they are, as in old land, a part of the soil, intimately blended to a depth of from six or eight inches. Now with our view of a summer fallow, we care not in what condition we find the soil, so that it admits of being plowed and possesses the requisite fertility to produce a crop.

We would plow the land, presuming it to be neither too wet or too dry, during any time from January to March, five inches deep. A large part of the seeds of weeds or grasses the soil may contain will, under the showers and warmth of that season of the year, soon vegetate. Now, if the object is a naked fallow, we would defer the second plowing to as late a season as possible, and not allow of the growing weeds or plants to perfect their seeds, and then plow the whole under with a six inch depth of furrow. Little or no vegetable growth will now be seen till the autumn rains come on; partly because there is no rain during summer, and partly because the present surface of the field is from a depth—if the land be new—from which but few seeds will be expected to germinate. We now have what was the surface soil, at bottom, and what is more properly subsoil, at top, to be ameliorated, mellowed and fertilized by the action of the air, heat, and light of summer.

As soon as the autumn rains will admit of plowing, plow to the same depth as at the last plowing, in May or June, and sow the seed. This brings the real surface soil up again where it should be, and the improved and fertilized subsoil is again returned to its proper position. We admit that, during the different plowings, there is more or less of intermingling of the surface with the lower strata of soil; but the

general effect is as we have stated, and which we believe to be the best possible condition for success. But we would not recommend a naked fallow for a California soil and climate. We will assume that the soil is new and amply fertile to produce, under favorable circumstances, all the crops that the peculiarity of our seasons will admit of; or so reduced by previous croppings that a fertilizer is needed.

If the first of these be the condition, then we would sow, after the first spring plowing, oats, barley or peas, or all of them; of course, no second spring plowing is necessary; so that not only is this expense saved, but a fair and remunerative crop may reasonably be expected, and the ground to remain in stubble till plowed the following autumn for wheat. If the soil needs a fertilizer, then, at the first plowing, sow buckwheat or clover thickly, and when grown, turn it under at the May or June plowing. With this condition of the land, a single plowing to a depth that will not quite bring up the buried vegetable fiber to the surface, and the land is ready for the seed.

We will now take a field in the condition in which "Rusticus" supposed it; a wheat stubble, or the stubble of any other grain, and our mode for fitting it for wheat is this: as soon after the first rains of autumn as the ground can be plowed, turn under the stubble deeply—eight inches is not too deep. At this depth very few of the seeds of weeds, that may have grown among the wheat or previous crop, can vegetate; they are, therefore, harmless as respects the succeeding crop. But nearly all seeds, within five inches of the surface after plowing, will vegetate soon after the first rains. Immediately thereafter plow again, but only five inches deep, and sow the seed. This is amply sufficient depth to secure an even vegetation and growth of the wheat; it is quite as deep as any ordinary harrow penetrates even if plowed deeper; therefore, as only this depth of soil can be made mellow and friable by its action, it is useless to plow deeper, and the growth of wheat will be better, in every particular, by so preparing the soil, that as the roots penetrate downward they shall find a soil gradually more and more compact, causing a greater multiplicity of fibrous roots, as explained by diagram and illustration, on page 254, of *Culturist*, volume one. A depth of five inches, at the seeding, is better for wheat than any greater depth; but it should always be preceded by a deeper plowing.

It is not to be presumed that, during the past year, we have held the plow for the summer fallowing of fifty or five acres of land; but we have carefully made note of the effects of the mode we recommend in several fields in which it has been adopted at our suggestion; and in every instance the result has proved highly favorable and satisfactory. Not that there is any striking peculiarity in the mode recommended except as regards the depths of the different plowings, and the substitution of almost any description of fallow crop, either for its value in grain product or as a fertilizer; in place of the costly and unremunerative naked fallow. The foregoing are our views of summer fallowing as applicable to a California soil and climate, and have no reference to "rotation of crops," a term applied to a certain routine and change of crops and culture, requiring a series of years more or less to accomplish; and though summer fallow has often appeared as a feature in the routine, it is now

with the most intelligent and practical culturists, even in Europe and the Atlantic states, almost entirely discarded; as under a proper system of culture, there should be no weeds, or foul grasses, or their seeds in the soil, to require the scourge of time, labor and expense incident to the naked fallow.

GRAPE-GROWING AND WINE-MAKING IN CALIFORNIA.

[CONTINUED FROM PAGE 73.]

CULTIVATING.—The vines having been planted either as cuttings or as rooted vines, in the month of January, the ground being recently plowed, not many weeds will be visible before the month of March; but this month it will be time to commence, either on account of weeds, or that the ground has already hardened around the vines, and required stirring and pulverizing so that the atmosphere may penetrate freely to the roots; for this purpose the well known shovel-plow is the best and most simple instrument, used commonly in the Western states to cultivate the Indian corn. This requires one horse and a man—said plow can go within an inch of the vines, and consequently destroys all weeds. First, the plowman plows one way, and then, when done with the field thus, he plows crossways; by which operation any weeds escaping the first plow, will be successfully destroyed without using a hand hoe. In this way, one man with two horses—one horse in the forenoon and the other in the afternoon—will comfortably plow three acres a day, as an average, in twenty-six working days of the month.

All plantations of vines, one or more years old, ought to be plowed twice a month, as above described, to keep weeds down, and stir up and pulverize the ground, by which you will charge it with nitrogen. This exposure of alternate strata of earth to the action of the sun, air and rain, fertilizes the soil incredibly; besides the weeds plowed under ground, by their rotting, enrich the earth and impregnate the same with ammonia and humus; then a mellow ground is much more adapted to attract moisture from the atmosphere than a hard caked one.

PRUNING, FIRST YEAR.—When the last plowing with the end of July is done, nothing more in the way of cultivation is necessary until the end of December or beginning of January—the time for the pruning. Your vines, if planted as cuttings, will have but a small shoot; but if rooted vines, these shoots will be strong, and several of them; in either case you cut the vine back to two eyes, always careful that all ground shoots shall be clean cut away from the main stem; your pruning knife must be sharp, so as to make a sound and round cut, to heal easier than long cuts that injure the vine; and it looks bad, besides, to see dry sticks of an inch and over sticking out. When the vine sprouts, which is about the month of March, and sooner in this country, the planter must inspect carefully his new vines, and break all sprouts out from the vine except the two coming from the two eyes left for that pur-

pose. This done, the planter must again put his shovel plow to work, and cultivate the soil precisely in the same way as last year, described above.

PRUNING, SECOND YEAR.—Again, with the end of December the pruning begins, there having been two vines raised on each stem; the one the most feeble or crooked is cut off with the pruning knife; the other is left to the length the planter wishes to raise his vine stem. If it is a small vineyard, I would advise to raise the vine to four feet above ground, and stake it; but with a large vineyard this would be too expensive in this country, and then to cut your vines to two feet and a half above ground. If sticks are to be used, they are to be driven in the ground after the vines are pruned; if not, then these stems, cut to the height of two and a half feet, should remain as they are for the present. When the sprouts begin to show themselves, the vines must be thoroughly cleaned from them, and every bud rubbed off on the vine except the three top buds, which are left to make the head of the stem, but besides these nothing must be tolerated to grow on your stem. The shovel plow is now put to work again as in previous years: this time the planter will have a small crop, several pounds of grapes to the vine, but must mind if vine is bearing too much; break this surplus out in the beginning, as it would enfeeble your yet tender vines, and be injurious to them for coming years.

PRUNING, THIRD YEAR.—The grapes having been gathered, the pruning will begin again, and in December or the beginning of January, this time there are three vines on the main stem; two of these vines must be cut to two buds each for making wood—for so-called water branches or vines—to become, the next year, the bearing vines; and the third one of these vines cut to four buds, which will be quite sufficient to bear grapes, but if the main stem is quite thrifty you may have five buds; such a vine will average, in this country, generally, from ten to fifteen pounds, and often as high as thirty pounds of grapes. After said pruning the cultivation goes on as in the preceding year.

PRUNING, FOURTH AND SUBSEQUENT YEARS.—Many and various are the opinions in pruning bearing vines. Some assert that the old way, to cut the vine back to from six to ten spurs, and on each spur to leave two or three buds is the best; but on mature reflection, considering that the stem so cut has to make all the wood, besides to produce and ripen the grapes, it is not reasonable to believe this mode to be correct; and in fact, experiments in different countries and climates have proved this doctrine false. It is a well established fact that the best mode of pruning is to cut the stem to three spurs each, with two buds, and leave three vines each two or three feet long, according to the strength of your stem; the three spurs will grow this year wood for next year's bearing, and the long vines will grow the grapes. Next season the old three vines which have borne grapes this year, are cut off to spurs with two buds each, and the three vines originating from the last year's spurs are left to bear

grapes this year, and so on alternately from year to year. This mode of pruning will insure a large crop every year, and will not exhaust the vine.

SUMMER PRUNING.—The native Californians never used to prune vines in the summer, but let them grow any length they pleased. This is erroneous; every person on reflecting at once can see that the sap required to grow and produce vines ten, and often twenty feet long may be better used if it is forced into the grape; undoubtedly the berries and bunches will be large, if moderately trimmed; besides, this trimming is a great advantage when the grapes are gathered, as the picking is so much easier than in an untrimmed vineyard where everything is tangled up. The best mode is to cut the tops of the vines to the height of five or six feet from the ground, in the month of July, for the first time, and the second time in the middle of August. This operation is done easily and pretty quick; one man with a sickle tops off about 2,500 a day. Besides the above named advantages there is one more, viz: where the top is cut off, everywhere small vines will spring out and form a dense leaf on the ends of said vines, keeping the grapes growing underneath in a moderate shade, and thus making them more tender, juicy and sweeter. It is, therefore, a mistake, practiced often by new comers from modern Europe, that they will break out the so-called suckers—that is, little branches starting out behind the leaf and growing feebly up to the length of a few inches. These, in the northern part of Europe are broken up, but not in Italy, Greece, Smyrna, etc. Now California, having a warmer climate, the vines need more protection against the sun than elsewhere; and experience shows, that where some bunches of grapes are exposed without the shelter of their leaves to the rays of the sun, the berries remain small, green, hard and sour.

AGE OF THE VINE.—This depends on its treatment by pruning, distance of the vines from each other, and the climate. In France a vineyard, planted two and a half to three feet apart and two feet in the rows, and of course, trimmed spur fashion, will be very feeble when twenty years old, and as to its yield almost worthless. If planted a larger distance apart and pruned in the alternative mode—that is, short spurs for wood and longer vines for bearing—it will be at thirty or more years pretty good yet.

In the upper part of Hungary, closely planted and badly trimmed vines, last from fifteen to twenty years only; in the southern parts of Hungary, from twenty-five to thirty years; in Italy, Greece, Smyrna, etc., where the close planting is not in custom, the vines reach an age from one hundred to two hundred and three hundred years, and will bear every year a crop from 1,000 to 2,000, even up to 4,000 bunches of the largest size.

California seems to possess even more power of keeping the grape vine during a long period of years in vigor, notwithstanding said injudicious trimming. There are Missions in southern California where vines are eighty years old, and with good care, will last treble and quadruple that amount of time. I believe that a vineyard planted

eight feet square to the stem and pruned on the alternative system will last three hundred years and be vigorous in its bearing.

In general, no manure is or was used by native Californians on their vines; there may have been an exception of one or two persons, but not to my knowledge; and of course, the new settlers have no occasion as yet to manure their new plantations, which are still rich enough without it.

GATHERING THE GRAPES.—No grapes ought to be gathered for making wine until they are ripe, and in fact over ripe. As long as they do not stick, when handled, to your fingers, like sirup or honey, they are not fit to make a genenous wine. Some persons hurry on the vintage, in fear that the frost will hurt the crop. This is erroneous; the frost improves the ripened grapes, and makes the wine far superior to that of grapes gathered before the frost. The world-renowned king of the wines, as the Tokay is called, is made in Hungary, from grapes gathered very often under the snow, and never before a good frost has shriveled them.

The gathering is simple and expeditious. One man with a basket can gather from 1,500 to 2,000 pounds of grapes a day in this country, if there is a cart close by to take the grapes to the press, provided the vines are summer pruned and not entangled.

Persons having small vineyards will do well to gather their grapes in the morning, and not later than nine o'clock; for if gathered in the heat of the day, the fermentation will be too vehement, which is not good for making the best of wines; but when the vineyard is large, other remedies must be employed to prevent a too hasty fermentation.

CRUSHER.—When the picked grapes are brought to the press house, they ought to be crushed immediately, and not left standing in tubs over night, or the next day.

The crusher is a simple machine: there are three cast iron cylinders; two of them of even size roll against each other; the third one is on top of the two lower ones, and is fluted for the purpose to take hold of the bunch and jam it down to the two lower ones; these latter have very small projections, like a waffle-iron, so as to crush the grapes, but not the grape seed, which would be injurious to the taste of the wine. I have one of the above named crushers, made to crush apples for cider, and it answers admirably. Two men can crush with it 5,000 pounds of grapes easy in a day.

This crusher is placed above a common screw press, in which the grapes from the crusher will fall, with stems, juice, and seed; the juice running slowly off by itself, and is carried in buckets to the cellar, and filled in the barrels.

PRESS.—This instrument may be made simple and almost to every man's own idea or taste; it is not material, as long as it presses out the juice of the grapes. The top planks are placed on the substance and the screws drawn to squeeze out the juice from said crushed grapes.

WHITE WINE.—It was mentioned before, that during the crushing of the grapes and falling of the same in the press, some juice will run off without pressing; this juice will make the first quality of white wine, and is generally barreled by itself. When the press becomes full, and is pressed slightly, the juice thus gained will make the second quality. Now the balance remaining can be used to distil brandy from, or make an inferior quality of red wine. For the latter purpose, put the whole mass, with stems and all, into a large fermenting tub, and when nearly full, fill the balance with pure water and let it ferment.

The first and second run of the juice, as stated, is put in separate barrels, which are filled within six inches from the top, the bung-hole covered with vine leaves or a cloth, and left for fermentation.

RED WINE.—If persons wish to make first quality of red wine, the process is as follows:

Crush your grapes as above stated; take the whole crushed mass together, with its juice, and put it in the fermenting tub; cover said tub with a clean cloth; let it ferment in warm weather six days; if cool, twelve or fourteen days, and take every day a crutch-like stick and press the stems, which will come to the top of your tub, down into the fluid mass; when, after the above given time, you put your ear to the tub and hear no fermentation, the wine is ready to be drawn; but to be perfectly sure, take a gimblet and bore a hole in the tub about from six to ten inches from the bottom, according to the size of the vessel, and if the wine comes out clear you can draw it off into the barrels; but in your fermenting tub you must have, previous to putting in the mass, nailed a grate or kind of sieve over the faucet hole, to prevent the grape seeds from coming into the faucet hole. Now your red wine barrels have to receive the same care, as stated above of the white wine, in your cellar, with the exception that the red wine barrels must be filled full, as there is no danger of a strong fermentation as of the white wine. Of course every person will understand that to make red wine you must have blue grapes; but white wine can be made as well from blue as white grapes.

SECOND QUALITY OF RED WINE.—It was stated above that the white wine from the blue grapes was pressed, and then the mass of stems and husks was put into a fermenting tub filled with water and left for fermentation, the fluid drawn off thus would give only a poor wine; but if said fluid is pressed over stems and husks in a second tub, and left over them for twenty-four hours, then drawn off and poured over stems and husks in a third tub, and this way continued up to five or six tubs—the fluid drawn off from the last tub will make an excellent wine the next July or August.

When the fluid from tub number one is drawn off to pour it over the stem and husk mash in tub number two, one must be filled with warm water, which is left twenty-four hours on it, and then the same process is applied as above described—said fluid passing through all the tubs; and this is to be continued by pouring slowly

warm water over the masses in said tubs until every particle of spirituous matter is extracted from them—this so extracted fluid is then used to distil brandy from.

BARRELS.—Nothing in making wine will require more attention and watchfulness than the keeping of the barrels clean. The planter may have the finest locality, the best soil, and good ripe grapes, etc., and still his wine will have a bad taste, become sour, turbid and unpalatable, if he does not take the best care of his barrels. He is often compelled to purchase all sorts of barrels, and may think, by putting hot water in the barrel and washing it out several times, it will be fit for use, but this is a great mistake; then such barrels are mostly moldy and sour; neither the first nor the latter will be removed thus; but only if the head of the barrel is taken out, and the barrel itself thoroughly burnt out with shavings or straw, so that its inner parts be charred from one-sixteenth to one-eighth part of an inch all over; then washed out first with hot and last with cold water several times until the same runs off clear, the barrel will become sweet.

The above process is with barrels which the planter has purchased, or such of his own that become sour or moldy by neglecting the precaution I will give forthwith, viz: When your wine barrel gets empty, take said barrel immediately and wash it out with hot water, then several times with cold water, and burn some sulphur in it in the following manner: 1st. Put the spigot air-tight in its hole. 2d. Have the bung covered, with a clean linen rag also in readiness lying next the bung-hole. 3d. Make a small hole in your sulphur-coated linen strip. 4th. Insert into this hole a piece of wire one or two feet long. 5th. Light said sulphur strip and push it quickly through the bung-hole into the barrel and bung it up. As long as an oxygenous air is in the barrel the sulphur will burn, and fill with its fumes the barrel; when extinguished, take said wire out and bung up the barrel air-tight, and keep in a dry, sheltered place, ready for use. A barrel prepared in this way will never sour or become moldy; and when you intend to fill the same with wine, you have only to wash it out first with hot and then with cold water. Said sulphur strips can be got in some stores, but each planter may prepare them for himself by melting the sulphur and dipping them into the molten mass.

PRESS HOUSE.—This building should be invariably in front of the cellar, as otherwise it would be inconvenient to transport the wine, and juice pressed out, from the fermenting tubs and the wine press to the barrels in the cellar. In large vineyards the press house ought to be two stories high, so as to have the barrels in the cellar filled by means of hose—to save wine and labor—at once, without any spilling, etc. In said press house there should be sufficient room for the press, the crusher, the fermenting tubs, all the empty barrels, and other articles necessary for manufacturing the wine.

CELLAR.—If the planter has a mountain convenient, which consists of soft stone or clay, the best mode is to make the cellar in the mountain; the length, of course,

depends upon the size of the vineyard, the width upon the quality of the rock or clay ; if strong, you may venture twenty feet ; but if not safe to that width, make it thirteen feet, with a gothic arch. This kind of a cellar is very cheap—much more so than a farm barn—is perfectly secure against fire, and makes excellent wine. Then a good cellar, with an even temperature during the whole year, is a material requisite for producing good wine. If there should be no mountain close and handy, the next best way is, when rocks can be had, to dig in the ground six or eight feet, begin two walls thirteen feet in the clear, and draw them gradually to a gothic arch ; when closed, cover these rocks several feet, with the ground dug out of the place, and it will give you an excellent cellar—strong, and of nearly an even temperature. Almost any man who can lay a stone fence can make such a cellar. But if no rocks can be had in the neighborhood, build a thick wall with adobes, two feet thick ; make it seven feet high ; put heavy redwood beams on the top of the wall ; cover it with redwood planks, and throw one foot of mud upon them ; then cover the whole with a shingle roof. A slight ventilation is beneficial for the preservation of the barrels, and a pure air to prevent mold.

The cellar and press house should be kept very clean ; no stuff which may rot or get sour should be tolerated in them or near by, as wine quickly attracts all bad smells and acidity.

[TO BE CONTINUED.]

GRAPES AND WINE, No. 3.

IN this number we propose to speak of the different varieties of wines, and first of some of the distinctions which arise chiefly out of their manufacture ; for it must be borne in mind that a great variety of wines are manufactured from the same grape, as well as a great deal of wine without any grapes at all, or very little grape juice entering into their composition. The first most obvious division of wines is in reference to color, as in red and white ; the next is that of qualities, by which they are designated, as dry and strong, as Port, Sherry and Maderia ; dry and light, as Claret and Hock ; brisk and sparkling, as Champagne ; sweet, as Malmsey, etc. It is the circumstance of manufacture, in a great degree, that gives rise to these distinctions.

If the skins of grapes are entirely excluded from the fermenting vat, a white wine is obtained ; as the juice of nearly all grapes, black, red and green, is nearly colorless. Even the best Champagne is made from a red grape so deep in color as to approach to black, and Sherry is made from a mixture of white and black grapes. The color of red wines is derived principally from the skins of grapes, and is produced by allowing the skins to remain in the fermenting vat. The coloring principle is soluble in alcohol, and as the alcohol is generated by fermentation, it unites with and dissolves the coloring matter of the skin, which becomes imbibed by the marc or juice ; the color is also increased by submitting the skins to pressure ; but some of

the more highly colored wines are rendered so by coloring ingredients; the best, an intensely deep red wine, called *vino tinto*, made from the Tintilla grape, one of the very few grapes with a deep red juice. But wines are not unfrequently colored by elderberry juice or its wine, and coloring drugs.

Agreeable flavors are sometimes given to wines that do not belong to the grape, by means of aromatic substances, such as orris root, elder flowers, raspberries, strawberries, pineapple, etc. The nutty flavor of some Madeira wines is given by almonds. The distinction of dry, brisk and sweet wines depends upon the mode of conducting the fermentation. We have previously stated that the fermentation of alcohol, which constitutes the distinctive property and vinous fluid, was the result of the natural action of saccharine and the fermenting principle on each other; and that wine consists of a combination of this alcohol, water, a minute quantity of the essential oil of the grape constituting the peculiar aroma, and sometimes coloring and astringent matter.

Dry wines are those where the saccharine matter and the ferment were so exactly balanced that they have decomposed each other by their mutual action, and no sweetness is preceptible—a certain quantity of sugar requiring a certain proportion of ferment for its decomposition. This is considered to be the most perfect class of wines. Such perfectly fermented wine is quite free from acid, and is not likely to change in any moderate length of time. Sweet wines are those where the saccharine matter was in too large quantity to be decomposed entirely by the ferment; or where the process of fermentation was interrupted before completion; consequently, some of the sugar remained unacted upon and in a free state, but in solution in the wine. Of this class are the rich Muscadine wines, as Malaga, etc.

Brisk or effervescing wines have had the fermentation checked before it was complete, the wine being transferred into bottles before the whole of the carbonic acid had separated, a portion of which, being formed by the continuance of fermentation in the bottle, is there absorbed by the wine, and retained in a condensed state; this, when freed by withdrawing the cork, gives the appearance which we term briskness, as seen in the common Champagne. Thus we see that it is easy to make, from the same grape juice, any of the three classes of wine, by certain management in the manufacture, for which more particular directions will be given when we treat of the making of domestic wines.

What is termed the bouquet of wines is that agreeable aromatic odor which is perceived on drawing the cork of any of the finer wines on their exposure to the air. In the sweet and half fermented white wines, this is immediately derived from the fruit, as in those from the Frontignan and Muscat grapes; but in the more perfect red wines, as Claret, Hermitage and Burgundy, it bears no resemblance to the natural flavor of the grapes from which they are made, and is altogether the product of the vinous process. This delicate aroma, when it exists, considerably enhances the quality and value of the first wines; it is often dissipated and lost by too rapid a fermentation. Liebig describes this volatile substance the produce of the fermentation, as a peculiar ether, which he has named *ænanthic ether*. The wines of very warm

climates have but little odor ; those of France have it in a considerable degree, but the perfume is the most intense in the best Rhenish wines. The flavor of wines is very different from the bouquet—flavor indicates the vinous power and aromatic savor which are *felt* in the act of swallowing the wine ; whereas bouquet, affects the organ of smell rather than taste ; and both are developed but slightly, except in old wines. A fictitious bouquet is sometimes given to new wines by means of orris root.

It is not uncommon for the manufacturers of wine to mix two or more wines together, in order to produce one of better quality, by correcting the defects of each other. By this mixing, the fermentive process is partially renewed, and the mixture is said to fret ; hence the practice is called *fretting in*. Mixed wines appear to unite into one durable and homogeneous liquor only in consequence of this fermentation. Wines of the first quality, however, whose principal merit consists in the bouquet, are never mixed with any other ; but each variety is preserved as much as possible in its natural pure state, being marked according to the year of the vintage ; and the wines of certain favorable years are much more highly esteemed than others. But the second rate produce of certain vintages in unfavorable seasons, and of particular vintages in all seasons, requires to be mixed with other wines to correct some bad quality or defect. Hence the fallacy of supposing that, though California may become one of the best wine-producing countries in the world, therefore every man will be able to make, from his own particular vineyard, the finest quality of wine.

France, owing to her fine climate and the great fertility and variety of her soil, is eminently calculated for the manufacture of wine ; but California can boast of a still more congenial clime and a greater diversity of climate, in which all the foreign grapes are grown in quality, superior even to those of the finest climates of Europe. In France, too, not only is wine produced in the greatest abundance, but likewise in great variety. But in this, again, California can equal the rest of the world in the variety and quality of her wines, if soil and climate are the producing causes. Although in France there are but few departments in which the vine is not cultivated, yet certain wine districts have acquired a greater celebrity than others, either on account of the superiority of their produce, or for their being more conveniently situated for exportation.

Champagne—the most celebrated of the French wines—is the produce chiefly of the province of that name, and is generally understood to be a brisk, effervescing or sparkling wine, of a very fine flavor ; but this is only one of the varieties of this class. There is both red and white Champagne, and each of these may be either still or brisk. The brisk ones, in general the most highly esteemed, or at least ones the most popular in this country, on account of their delicate flavor, and the agreeable pungency which they derive from the carbonic acid they contain, and to which they owe their briskness. There is a great difference in the quality of these wines, according to the particular vineyards at which they have been made. The finest wines are produced in the sloping grounds on the north bank of the river Marne, where the soil is extremely calcareous. The very finest of the sparkling Champagne is that of Ay, five miles south of Rheims.

Sillery is a white Champagne, and the best of the still kind ; it has more body and spirit than the sparkling varieties, and is very highly esteemed. In settling Champagne wines, many consider their briskness as a test of their excellence ; but a good juice will prefer a liquor of moderate briskness, as much of the aroma evaporates with the froth. The manufacture of Champagne in the best manner requires considerable skill, and is a matter of difficulty and uncertainty with the inexperienced. Champagne intoxicates speedily, probably in consequence of its alcohol being in a very volatile state, and in connection with carbonic acid ; the excitement, however, produced by it is of a far more lively and agreeable character than that which is occasioned by any other kind of wine ; but its duration is shorter, and the exhaustion which follows generally less.

Claret wines, or such as are called Clarets with us, are the produce of the country around Bordeaux ; but it is remarkable that there is no pure wine in France known by the name of Claret, which is a corruption of *clairet*, a term that is applied there to any red or rose colored wine. Round Bordeaux are produced a number of wines of the best quality, which pass under the name simply of *vin de Bordeaux*, or have the designation of the particular district where they are made, as Lafitte, Latour, etc. The Clarets, made for the world's market, are generally prepared for it by the wine-growers, by mixing together several Bordeaux wines, or by adding to them a portion of some other wines.

Thus we see how much our wines—like the politics of the present day—are mixed ; and that we do not always display a great depth of wisdom or knowledge of wine making, when asking for the best variety of grape for the production of this or that kind of wine. The genuine wines of Bordeaux are of great variety, that district being one of the most distinguished in France ; and yet but few varieties of the grape are used in their manufacture. The same vineyard, with the same kind of grape, but with a difference of soil and exposure, producing entirely different wines, having different names and qualities, and yet all may be good.

Sherry was originally the product of Andalusia, a province of Spain, and nowhere else was it found. The term Sherry, being a corruption of Xeres, the wine being made at Xeres de la Frontera, a few miles from Cadiz ; but as it became fashionable, this one district could not furnish a moiety of the supply needed, and immediately we find Sherry the product of almost any vineyard where there was a demand for it ; and even now, it is the opinion of those having good opportunities of judging, that at least one-half of the so-called Sherries are the product of wine cellars rather than vineyards, as it is a wine the easiest of all to imitate.

From what we have already said upon the properties of wines and their great diversity of character, though the product of a single district of country of no great extent, it is evident—taking into consideration the wonderfully varied circumstances of soil, climate, altitude and exposure of the vineyard districts of California—that we are destined to become as remarkable for the variety and excellence of our wines as any other country of like extent in the world. The subject of grapes and wine will be continued.

WORKING UP CHINESE SUGAR CANE.

AS several letters of inquiry have reached us in relation to the best mode of extracting the sirup from the Chinese sugar cane, we give the experience of those who have been successful in their attempts, even though not residents of California; believing that information derived from practical experiment and experience, will be more acceptable to inquirers than anything we might attempt from mere theory. It is our pride, and ever will be, when we recommend the adoption of any practice, to be able to say *we have tried it*; therefore what we recommend is the result of our own observation and knowledge of the thing, unless we distinctly state to the contrary.

The following interesting statement is from Mr. Conrad, in a report to the Philadelphia agricultural society, on the Chinese sugar cane:

Having given some attention to the cultivation of the Chinese sugar cane the two past seasons, I have engaged, to a limited extent, in its manufacture into sirup and sugar. And at the request of my friend, Thomas Ellicott, I have been induced to furnish the result of my observations and experience for the benefit of those whom it may concern. Though I am fully conscious that, to many persons in the community, the facts here stated are entirely familiar, yet it is to be hoped that the hints contained in the following report may serve to aid public opinion in duly estimating the intrinsic value of the sorghum as an article of culture. And it has been no small part of my design, in the details given, in some measure to assist enterprising farmers in introducing into their communities the cultivation and manufacture on their own soil, and with their own hands, a commodity of such obvious value—an article of domestic value, if I may so speak, which has heretofore drawn largely upon the financial resources of our people.

The largest lot of cane worked up by me this season was raised by Thomas Ellicott, of Avondale, who has taken more interest in this subject, probably, than any other man in Chester county; and was induced to engage in its cultivation by no other motive, as I believe, than that of testing the "sorghum question," by a fair and open experiment, for the benefit of the community at large.

The ground selected by him was a sod, such as would produce in a good season some forty bushels of Indian corn per acre. It was broken up early in April, and planted without manure of any kind about the first of May, in hills three feet apart each way. The season being unusually wet and cold, much of the seed failed to germinate, leaving many hills entirely vacant, and the remainder so thin that when weeded as judiciously as the case would admit, did not leave an average of over two and a half stalks to the hill, instead of three or four as was designed. The cultivation was similar in all respects to that used in Indian corn. The cutting commenced on the fourth of October, when the seeds appeared generally ripe, and it was nearly all worked up by the twentieth of the same month. This lot, containing four acres and ten perches, yielded eight hundred and eighty-three gallons of sirup, or a fraction over two hundred and seventeen gallons to the acre; and it is but due to remark that some twenty-five gallons per acre were lost by a misconstruction of orders in

cutting the cane about one joint higher from the ground on an average throughout than economy would require; so that the positive yield of this piece of ground, under all the unfavorable circumstances of its culture, should have been two hundred and forty-two gallons to the acre. And I may observe here that, having worked up small lots of cane for over thirty of my neighbors, this fall, I measured carefully several pieces of ground whose product had passed through my hands, for the purpose of determining more certainly what an acre of ground, under ordinary circumstances, might be expected to produce. The result of this examination gives an average of two hundred and forty-five gallons. And it is due to state in this connection that, on a careful examination of the importance of our mill, we have to admit that at least ten per cent. of the saccharine remained in the stalk, which if our works had been sufficiently strong, should have been extracted. This important fact being taken into account, will swell the average produce per acre to two hundred and sixty-nine and a half gallons. And from what I have observed of the culture and management of the several lots of cane embraced in the estimate alluded to above, I cannot but believe this result to be *entirely inside* of what *may* be done on good land, in an ordinarily favorable season.

A few remarks in reference to the seed, the culture, time of cutting, keeping it after being cut, method and cost of manufacturing sirup are added.

SEED.—Cultivators of the sorghum will need to be scrupulously careful lest the seed they plant should be hybridized with broom corn or other plants of the same genus, and to obtain that which has been thoroughly ripened. Broom corn growing some hundreds of yards distant, has been known so to affect the seed as to render the succeeding crop almost worthless.

CULTURE.—It is of importance to the success of its cultivation that the ground selected should be so elevated as to be clear of liability to excessive moisture; for although, when well matured, the sorghum will bear more frost than Indian corn, yet it is liable to material injury from early frosts in this latitude, when planted in cold, clay soils. The earth should be reduced to a very fine tilth before the seeds are committed to its keeping. As a method of planting, I would suggest that the plan adopted by T. E., on the four acre lot, described above, is perhaps as economical as almost any other; though the drill may be used to great advantage on clean ground, if it can be made to drop the quantity desired. During the subsequent cultivation, I think it ought to be reduced to about one stalk to three superficial feet, removing such suckers and inferior stalks as are likely to be backward in ripening.

CUTTING.—As to the time of cutting; it may be regarded as sufficiently ripe for sirup, when the seeds become generally of a dark brown color; but will continue to improve in quality, if left to stand till the temperature falls to thirty-two degrees F., or even lower. But "delay is dangerous," on account of the uncertainty of the season, and the time required to work up any considerable quantity of cane. It should

be cut obliquely, just above the crown roots, and one or two joints lopped off at top. I think the blades are stripped off more freely after cutting than while standing, and I have no doubt it "pays" to tie up the cane in small bundles, before attempting to load it, in order to facilitate handling.

KEEPING CANE.—The cane, if uninjured by severe frosts before cutting, may be kept good several weeks, if protected from excessive wet and hard freezing. This may be done either by housing or by placing in windrows, on rails or boards, and covering with straw.

FODDER, SEED AND CRUSHED CANE.—The tops, after the seeds have been knocked off with the threshing machine, together with the blades, when properly cured, make the best of provender for all kinds of stock that eat hay. The seed, of which thirty to forty bushels to the acre, weighing some forty pounds per bushel, may be expected as a fair crop, is much like the broom corn, and when ground makes excellent feed. The pressed cane or bagasse—if the mill does its duty—is of no value for fodder, but may make some manure when rotted, or might be useful as fuel for evaporating the juice. A small amount of vinegar may be got out of it, and I should judge, from its fibrous texture, that afterwards it would make ropes, or excellent paper manufacture. Our crusher is a light, one horse, two roller, cast-iron mill, capable of expressing about forty gallons of juice per hour—cost fifty dollars. The boilers have wooden sides and sheet-iron bottoms, and are set on brick work, so the fire reaches the bottom, but cannot approach the sides.

There are three of them; one of them, holding eighty-eight gallons, we use as a clarifier, and is set at a height which admits the juice to be run into it from the vessel under the mill, and higher by the depth of itself than the other two; so that when ready, the clarified juice is run into either of the others. These—each holding seventy-two gallons—are used for evaporating and finishing. For neutralizing the acid and clarifying I have used super carbonate of soda, which was applied after the juice had been brought gently to the boiling point and the first scum removed, and was continued in small quantities, while much green matter was evolved; still removing the scum after each application of the soda, when sufficiently coagulated to part from the fluid. The evaporation was continued as rapidly as possible after coming into the lower boilers, until the mass had reached a density of some twenty-five degrees, when it became necessary to slacken the fire, and proceed with much care, to avoid running it over or scorching the sirup. The operator will very soon be able to determine when the batch is sufficiently done, by the appearance of the boiling mass rising in somewhat larger and regular inequalities of surface, and receding with a little snap on the escape of the steam. Yet I have occasionally found it best to test the strength of the sirup; by the use of Beaume's saccharometer and a thermometer adapted to the purpose. The standard I assumed was about thirty-six to thirty-seven degrees B., at sixty F. This may have been beyond what was really necessary; but, in a case of this kind especially, it was best to err on the safe side, if

err we must. When the batch was sufficiently done, the fire was immediately checked till the charge was removed into the cooler, and a fresh supply introduced from the clarifying boiler. These boilers when well managed, were fully equal to the capacity of the mill, and have yielded over eighty gallons of sirup per day ; though I regard sixty-three gallons, with these fixtures, a reasonable day's work. In the consumption of fuel, we must have been prodigal, using about three-fourths of a cord for every sixty-three gallons. There were some obvious deficiencies in the arrangement of our furnaces to account for this, which if removed, would probably reduce the consumption to two-thirds of this quantity.

COST OF MANUFACTURE.—With this imperfect apparatus the actual cost of making sirup, after the cane was prepared and brought to the mill, did not vary much from eleven cents per gallon ; and I am inclined to believe, from all that I have been able to learn, that sirup may be made for ten to twelve cents, and *possibly* with profit at the former rate, if done on a sufficiently large scale, and with such appliances as may be obtained.

Our experiments for obtaining sugar are not yet fully closed for the season ; for, although winter has come, I still have a lot of cane in as good condition as when cut—near two months ago. We have succeeded in our experiments in making sugar, and in quantity and quality it seems quite encouraging, though in color it is not satisfactory, having in its complexion that distinguishing characteristic which, in spite of its positive worth, fixes on it the degradation of being "*low priced*." Although in the trials I have made, I have had the benefit of the report of J. S. Lovering, of 1857, and am indebted to his kindness for more minute instructions, personally rendered, I have as yet been unable to produce a crystalization sufficiently perfect to part freely with the residue ; and I think it is in consequence of this, and the ill adaptation of our boilers in part, that our productions has so far been of a dark color. But I feel entire confidence that we can yet make sugar from the sorghum, that will not only be *cheap* enough, but of quality *good* enough for any ordinary purposes.

I must therefore say, in relation to the practicability of raising and manufacturing our own sugar and molasses in this latitude, that there is no longer left any room to doubt. The experiments of the past season go to show conclusively that the farmers of the Middle states can successfully compete with their agricultural brethren of the South in the production of sirup equal in weight and superior in flavor to the very best molasses sent us from Louisiana ; and in no respect inferior to the finest "golden sirup" of Boston or Philadelphia ; and they also show that, while the interest of the farmer will be greatly promoted by giving the sorghum a place in his system of culture, an equal benefit will arise to the community at large from the diminished rate at which these necessities and luxuries of life may be furnished ; while as a natural result, some four or five millions of dollars, now annually sent out of the state of Pennsylvania alone, may be retained within the channels of our own trade. I will here close this imperfect sketch by saying that, in the statements and sugges-

tions made in this paper, I have been actuated by a desire not to mislead in reference to any feature of the subject, but, if possible, to aid in drawing the attention of the community to the value of the Chinese sugar cane, and at the same time to yield, for the use of others, what little my own experience has induced.

MILTON CONRAD.

We did intend to give the substance of the experiments of J. S. Lovering, in sirup and sugar making; but on taking the work in hand, found it so strictly technical as to be unintelligible to every person for whom we design to write. Professional chemists and sugar refiners, supplied with all the nice apparatus for testing and proving every step of their progress, need none of our assistance; but the farmer, unused to such learning, and only partly supplied with rude apparatus, wants to know how to make the best of his crop. For such we now write.

Let the cane mature as fully as possible, as light frosts do not seem to damage it much. Get the boilers in order to go right ahead when you begin. Get the best mill you can afford—an iron mill, if possible, as a wooden one loses the richest of the juice—then pitch in, cut, grind and boil as well as you know how. Be careful to strain the juice as clean as possible before putting in the pans to boil, and take off all the filth afterwards as it rises. A good filter is made by filling a keg half full of clean pebbles and fine charcoal; have a hole in the bottom to let out the juice and cover the top with a cloth strainer; run all the juice through this filter, as it comes from the mill. The juice of the cane froths so much in boiling that it is very liable to scorch, and give a bitter taste to the sirup; to avoid this, heat up moderately and watch constantly.

Whatever kind of kettles or pans you use in boiling, the evaporation can be very much accelerated by having them covered. A wooden cover is hardly suitable, unless it be of some kind of wood that will not give its flavor to the sirup. The best cover can be made of sheet zinc, and the best way to make it is to have two sheets the size of the top of the kettle, and fix them an inch apart, by nailing in blocks of wood. The air chamber between the two sheets is a good non-conductor. Then have an inch hole in the cover through both, to let out the steam; in this, have a flexible tube—say of gutta percha—to conduct the steam into a tub of cold juice, to warm it up for filling, as wanted. You have an idea of this operation in the agricultural boilers for stock-feeding. The philosophy of this improvement in evaporation is, that when exposed to the cold air, the steam, as it rises, immediately condenses again and falls back upon the surface of the boiling fluid, and thus the cold air continually hinders evaporation. The kettle which first receives the juice, must of course be more accessible to the use of the skimmer.

For the purpose of clarifying the sirup, various substances are used. Lime is most common, but some use milk, others use eggs, etc. One of our correspondents last year used a tablespoonful of soda in a glass of sweet milk, to fifteen gallons of juice before boiling, and thought it raised the green scum best of any other mode. The first boiling should reduce the juice to a thin sirup; then let it cool and settle for

twenty-four hours, pour it off and put in more soda and milk, and then boil to the thickness desired.

Those who desire to try to make sugar, must feel their way carefully. They may make a hit before they know it, and they may spoil good sirup in the experiment. After having the sirup well clarified, to make sugar, we know of no better method than to go on as for making maple sugar; but you must not expect to stir it off and grain it as readily as maple. With some it has grained in the kettle, but oftener it requires to be set away for some days, and a little grained sugar put in like yeast, to give it the hint; and after it has grained all it will, set it to drain off the molasses that remains.

We subjoin the conclusions of Mr. Lovering, as follows:

1st. It is obvious that there is a culminating point in the development of the sugar in the cane, which is the best time for sugar making. This point or season I consider to be, when most if not all the seeds are ripe, and after several frosts—say when the temperature falls to twenty-five or thirty degrees F.

2d. That frost, or even hard freezing, does not injure the juice nor the sugar; but that warm Indian-summer weather, after the frost and hard freezing, does injure them very materially, and reduces both quantity and quality.

3d. That if the cane is cut and housed, or shocked in the field when in its most favorable condition, it will probably keep unchanged for a long time.

4th. That when the juice is obtained, the process should proceed continuously and without delay.

5th. That the clarification should be as perfect as possible by the time the density reaches fifteen Beaume, the sirup having the appearance of good brandy.

6th. That although eggs were used in these small experiments, on account of their convenience, bullock's blood, if to be had, is equally good; and the milk of lime alone will answer the purpose; in the latter case, however, more constant and prolonged skimming will be required to produce a perfect clarification, which is highly important.

7th. That the concentration, or boiling down, after clarification, should be as rapid as possible without scorching—shallow evaporators being the best.

With these conditions secured, it is about as easy to make good sugar from the Chinese sugar cane as to make a pot of good mush, and much easier than to make a kettle of good apple-butter.

A practical correspondent of the *Painesville Telegraph*, gives the following directions:

From the most successful experiments, obtained from the most reliable sources, it is found that, in order to make the best flavored sirup, as well as the greater quantity, the cane wants to be fully ripened; the seed should be fully ripe before cutting the cane. A slight frost does not injure the cane, but should a frost come to kill it, it should be immediately cut and shocked, and the sooner it is worked the better. To make a superior article of sirup, the main stalks should be kept separate from the suckers, and more especially if the suckers have not ripened.

The cane should be stripped, and the top cut off to the second joint, before cutting, after which the cane should never be allowed to touch the ground. It is much easier keeping the cane from the dirt than to take it out when once it has entered the juice.—*Ohio Cultivator.*

SUMMER PRUNING.

TO prune or not to prune our bearing fruit trees during the summer and autumn months, is a matter which has long engaged the attention of pomologists; and yet, directly opposite opinions are maintained in reference to the utility of the practice. Some contend that a tree should never be trimmed or cut back, except during winter and spring, previous to the starting of the buds for the season's growth. But it is clear to our mind, that the good results expected to be derived from the practice, depend entirely upon the object sought. We would not prune a tree at all without a motive; if the object be to promote fruitfulness, is it not reasonable to suppose that quite a different system of pruning may be applicable, and possibly at a different season of the year, from what would be considered essential, if only the growth of wood or formation of the tree was the object sought?

From a careful investigation of the subject, corroborated by experiment, our opinion is, that summer and autumn pruning are, in California, essential to the successful growing of some of the finer fruits, and highly beneficial to others. We would not like to be misunderstood, however, upon this subject; we are opposed to the cutting back of the bearing shoots of the vine or any fruit-bearing tree, with a view of benefiting either the size, flavor or early maturity of the fruit of the present year's growth; for, as we have on several occasions stated, we believe the extension and preservation of the vine, and the limbs and leaves of trees beyond the fruit, essential to its fullest growth and perfection; but there is an object to be attained beyond this; we must so manage, if possible, that we can rely upon a crop the following year. Has summer pruning anything to do towards securing it; and if so, when should it be performed?

Very many pomologists in California have learned to their disappointment, how unreliable are some of our finest varieties of apricots in the production of fruit. Various modes of pruning and cutting in are recommended by authors and those engaged in fruit-culture—nearly all recommending, more or less, the cutting back of the last year's wood in early spring. This, to a certain extent, secures the object, so far as there are fruit buds below the point of cutting; but it will be noticed, upon trees that are not cut back, that the few specimens produced in some seasons, are at or near the extreme ends of the last year's wood. Now it is evident that, had this wood been cut in for the purpose of giving symmetry to the tree, or a closer growth, the bearing buds of that year would have been mostly or entirely removed. Then, whatever good might have resulted to the tree, in respect to form or vigor, it was at the expense of the fruit crop, and left the tree in no more likely condition to

produce fruit the following season than before. It is upon this tendency of many varieties of fruit trees in California to produce their fruit near the extremity of their limbs, thereby exposing it to injury from the too direct action of the sun's rays, and the inability of the slender shoots to sustain their burden of fruit, that we have based our system of summer pruning or cutting in, to secure fruitfulness, at the same time that it equally secures the symmetrical growth of the tree.

If immediately after the apricot, peach or plum has perfected its fruit for the season, the new growth which has extended beyond, be cut back one-half or two-thirds its growth, much of the vigor of the tree, for the remainder of the season, is expended in the production of fruit buds, as well upon the main shoot as upon the laterals; and they will be found to be far more numerously set than though the whole growth had been permitted to remain on. This, whilst it secures the requisite amount of fruit buds for the ensuing year, places it around the base of the shoot upon strong and fully matured wood, capable not only of sustaining the weight of the fruit, but supplying it with abundant nutriment at the most critical and important period of the fruit's growth, the expanding of the blossom and the setting of the germ of the fruit. All are familiar with the habit of the apricot, as regards its tendency to blossom without maturing the fruit.

By cutting back at the season we have named, therefore, we not only secure the setting of the fruit, but the vigor of the tree is increased to a degree amply sufficient to maintain and perfect it, by removing a large part of what is really a surplus growth; for we are satisfied there can be an excess of wood growth as well in fruit trees as the vine; but a knowledge of the best time to remove such surplus—if it should be at all—is a matter deserving of careful consideration. From well attested and careful experiment for more than a single year, we are satisfied that very many of our fruit trees now chary of bearing, would by a judicious summer pruning, be made productive of regular and abundant crops.

WATERMELON MOLASSES.

HAVING been engaged the last season in raising watermelons and making them into sirup, I thought a description of my mode of operation might be acceptable to some of your numerous readers. I think that the watermelon will not make sugar in consequence of the waxy properties of the sirup when boiled to that consistency; but for the sirup, it has no equivalent for preserving all kinds of fruit with which our country abounds. It is also excellent for table use. The process is very simple. I express the juice by hand, by putting the core of the melon in a sack; then boil to a proper consistency in a copper kettle. From experiments which I have made, I think that we cannot get a better return for our ground than by this process. I made from one acre of ground the last season, eighteen barrels of sirup. I sold this for eighty cents per gallon, which made four hundred and forty-six dollars for my labor. Now I am aware that this will seem incredible to a great many

who have not tried the experiment ; but nevertheless, it can be done, and if any one doubting it will call on me, I will convince him of its entire practicability.

ROSS COUNTY, OHIO.

C. H.

Editor Culturist.:—Some time in May or June last, I cut from an Eastern paper the above account of the manufacture of molasses from watermelons, and as I had planted a considerable field of this fruit, I determined, in case the melons did not bring me a fair price in the market, to try my hand at sirup-making ; so I drove a tack through the bit of a newspaper, transfixing it over my mantlepiece—I have no scrap book—that I might refer to it when wanted. Melon time came, and as I predicted, the fruit is in no great demand and comparatively of little value in market. But this doesn't trouble me, so long as I can render them of greater value by making them into sirup. I have tried it, and what is more, I have been entirely successful.

My mode of operating is this: I take a clean, tight barrel, stand it on one end, and through the upper head cut a hole six or eight inches in diameter, and cover it with wire gauze, not so fine but that the core and pulp of the melons are easily rubbed through it; the gauze should be fastened around with tacks. A boy stands by the side of the barrel, and as the melons are passed to him, by a single cut with a knife they are divided in the middle, the knife is dropped, and with the hand, the core and all that portion attached to the rind, that is easily removed by rubbing, is scooped out and falls upon the gauze, where, with a rub or two of the hand again, it passes through into the barrel. No sharp instrument should be used in separating the soft and sweeter portion of the melon from the rind, as it would be likely to go too close to the rind, the consequence would be more juice, but not containing saccharine matter enough to pay for evaporating, besides imparting a slight bitterness to the sirup.

A smooth, round edged, wooden scoop answers very well instead of the hand to extract that portion suitable for boiling. None but ripe or sweet melons should be used. Near the bottom of the barrel the pulp is drawn off into cloth strainers or filters and immediately passed to the boiler, which may be made in any form best adapted to rapid evaporation. Care is requisite in boiling the sirup after it begins to attain consistency. [The experimentist will do well to observe the mode of manufacturing Chinese sugar cane sirup in the present number of the *Culturist*. Ed.] From the result of my experiments already made, I am satisfied that a better profit can be realized from an acre of melons made into sirup, than is in very many cases by selling the fruit. The cost of fuel is the only drawback to a successful manufacture of melon molasses in California, of a quality fully equal to much that is imported as the product of sugar cane. The rinds and the refuse of the melons I feed to my pigs and cows. The latter are exceedingly fond of them, and fed at this season of the year when there is but little else than dry feed, serves to increase their milk, and so sensible is the effect upon my herd, I am satisfied that melons could be raised to advantage as feed. The rinds should be fed in clean boxes, and cut sufficiently to enable the cows to take them up readily. Brother farmers, make the trial.

SACRAMENTO RIVER, Aug. 25th.

MELON PATCH.

ART, SCIENCE AND INVENTIONS.

SURVEYING.—Farmers who are laying out land, cannot be too particular in securing the services of surveyors who use accurate instruments, as will be seen from the following statement: If the magnetic needle varies one-fourth of a degree, it will cause a departure of twenty-three feet in one mile. If a square farm of one hundred acres, is measured with a chain which is half of a link too short or too long, it will cause an error of exactly one acre.

IMPROVED ARMS.—There have been many speculations as to the modifications which the improvement in the art of war, and the invention of more destructive weapons, would produce in the method of conducting battles between civilized nations possessing these increased means of killing each other. A writer in the last number of the *Edinburgh Review* thus discourses upon the subject:

It is much easier to describe these improvements than it is to estimate what their probable effects may be on the science of war, when they are brought to the test of actual experience, though it cannot be doubted but that very great changes in the manoeuvring of troops and the mode of fighting battles must result from them, and that the general who first appreciates their effects will be the master of the situation.

As battles have been hitherto fought, the usual practice has been for the opposing armies to arrange themselves in battle array at distances varying from six hundred to one thousand, five hundred yards from each other. At Waterloo the armies were about one thousand, two hundred yards apart. At such distances, musketry fire was out of the question, as was the fire of grape or any other except round shot from field guns; and even that was so uncertain and innocuous against bodies of men, that no decisive result could be obtained from it. It was necessary, therefore, that one of the armies should cross the intervening space to get at the other. This they could do in any formation that suited them, and the assailants advanced to within two hundred or three hundred yards of their opponents, without suffering any serious damage. As troops can easily pass over one hundred yards in a minute, with two or three minutes at the utmost from the time of the army coming under fire, they were upon their opponents, and either forced them to retire, or were beaten back, with a loss that was wonderfully small, considering what it ought theoretically to be under such circumstances.

All this must now be altered. It will be impossible to range troops at less than two thousand yards, or they would be able to shoot each other down with their rifles, even without reference to artillery; shells with time fuses, at that distance, will certainly be as destructive as grape-shot was in the olden time at three hundred yards; and to avoid their effect, the men must lie down on the ground, or hide themselves behind some undulation of the country. But battles are not won by cannonading, and the question still remains how armies are to get at one another; for, even supposing that at two thousand yards very little damage can be done by rifle practice, still, whenever a column or body of troops advances within one thousand yards of a division

drawn up to receive it, they will be torn to pieces during the ten minutes that must elapse before they can close, and it will scarcely encourage them to know that, if repulsed, they must be for ten minutes more within the range of their enemy's rifles.

One obvious suggestion for getting over a portion, at least, of the difficulty, would be to advance the men as skirmishers, in such loose formation that artillery would have little or no effect on them, and even rifle practice be very harmless, considering the unsteadiness of aim incident to the heat and excitement of the battle field. This, no doubt, would be a practicable manœuvre if there were no cavalry in the field; but if the infantry do advance far from their supports, and in such loose formation that they cannot collect and form squares at very short notice, it will require better and steadier troops than we have seen to prevent themselves being ridden over and cut to pieces. Even abstracting the element of cavalry from the question, it is evident that, as both armies can throw out skirmishers, and in that respect be equal, no decisive result can be expected from such a mode of fighting.

In the Crimea, the generals seem to have felt this, though the arms then employed were not what they have since become, and their effects were not appreciated as they now are. At the Alma, the allies rushed to the Russians the moment they came within range, without much manœuvring and still less formation; and at Inkerman, the Russians, evidently dreading the passage of the gulf in daylight, stole upon the British in the dark, and the fight became a hand-to-hand struggle. This difficulty will frequently be felt in future, if one army cannot steal on the other unawares, to take it at a disadvantage. As far as we can at present judge, the fight probably will be between the two artilleries till the one gains a superiority, and is then enabled to turn its attention to the infantry; and when once it has decimated them and rendered them unsteady, one army will then rush as rapidly as possible at the other, and a hand-to-hand fight decide the day. In whatever manner battles will in future be fought, it seems tolerably evident that close formation and heavy infantry drills are out of date, and that light infantry movements are essential, not only to enable the soldier to use with the greatest possible effect the improved weapons which have been put into his hands, but also to prevent his presenting such a target to the fire of the enemy as battalions in close formation and with slow movements must do.

PIN-MAKING.—By means of one of the ingenious machines lately introduced in the manufacture of pins, two barrels of pins are turned out daily by one machine, each barrel containing two million pins. It takes the wire from a reel, cuts it into the required lengths, points, heads, and makes a perfect pin by a single operation. From this machine the pin falls into the hopper of the sticking machine, in which they are arranged, stuck into the papers at the rate of three hundred a minute, and come out all perfect, only requiring to be packed, to be ready for market. It is well known that pins of brass wire are deficient in strength and elasticity, and pins of steel and iron have been introduced as a substitute, but they must be coated with tin. This operation, however, cannot be performed equally well with iron as with brass, and without it, the pins have an uneven surface, which renders them inconvenient

for use, as they are liable to tear the cloth. To avoid this defect, the iron is first covered with a thin coating of copper, or other metal having a greater affinity for tin than iron has; but in order that the result should be satisfactorily attained, it is necessary to polish and pickle the pins before coppering them. This is done in a bath prepared for the purpose, and when it is accomplished sulphate of copper, in crystals, is added, and the whole agitated for ten minutes, when a solid coppering will be effected, with a finely polished surface.

HAND HELIOSTAT.—By this simple instrument, which is comparatively inexpensive, as portable as a ship's compass, and which is moveable, a light can be flashed ten miles in such a manner as would attract the observation of the most careless person. It can be used from any spot where the sun's rays reach, as from between the trees of a forest, from a hill-side, or from the mast-head of a ship. It does not require a "sky-line." It has another peculiarity, in being able to flash its messages in secrecy, except to those who happen to be stationed in the narrow path along which they were sent. Many occasions arise, especially in times of war, when such an invention would be quite useful.

IMPROVED THERMOMETER.—An improved thermometer has been invented, designed to measure the intensity of heat—beyond the limit of the ordinary mercurial thermometer—and to register its variations. The principal feature in this instrument, and that which constitutes its chief value, is its capability of being used under pressure, as in a steam-boiler, gas-works, hot air ovens, or any confined medium where it would be impossible to apply the ordinary thermometer, as the sensitive part of the instrument, which is acted upon by the heat, does not require to be withdrawn, but communicates the result to the needle, which is exposed to view on the dial plate.

TEMPERATURE OF OUR GLOBE.—It is now a well established conclusion with astronomers and geologists, that the superficial temperature of our globe has arrived at that point below which it can never descend by more than the small fraction of a degree, so long as all external conditions remain the same as at present, and the superficial temperature of the remoter planets, will in all probability, be reduced to the corresponding limit. To these external conditions, therefore, and not to their primitive heat, it is believed that the existing temperatures on the surface of the planets must be attributed, assuming always that they are not of less antiquity than our own globe. Judging by the decrements of temperature which have been observed, it is estimated that an increase in the height of the earth's atmosphere of thirty-five or forty thousand feet, would elevate her superficial temperature, if placed in the remote planetary regions, to nearly the mean temperature of our present temperate zone. The same conclusion will hold with respect to the three planets, Neptune, Uranus and Saturn, if they be supposed to have atmospheres similar to that of the earth, and of sufficient extent. Their temperatures must be sensibly uniform over

the whole of their surface, not being subject to any appreciable annual variations. The same conclusions will hold with respect to Jupiter, except that there will be a small augmentation of temperature arising from solar radiation.

ETCHING ON GLASS.—Etching on glass is a very simple process; the glass is first heated in a sand bath, and then rubbed over with purified beeswax; the temperature of the glass being such as to cause the wax to melt completely and uniformly cover its surface. When every part of the plate is covered with wax, it is set aside to cool. A paper having the design boldly drawn upon it is then attached to the unwaxed side of the glass, and the operator traces the lines through the wax by a pointed instrument, care being had that the point clears all the wax from the glass wherever the design comes. This done, some coarsely powdered fluor-spar must then be placed in a vessel, together with a quantity of sulphuric acid, well mixed together, and as soon as they are incorporated, the glass is placed over the vessel, the wax surface downward, and a moderate degree of heat is applied to the bottom of the vessel. The fumes of fluoric acid soon arise and attack the surface of the unprotected portion of the glass. In half an hour it may be removed, washed, and the wax scraped off.

DECAY OF TREES.

Editor Cultivist:—The early decrepitude of apple trees especially, is attracting serious consideration in the Atlantic States. Discussion has elicited a variety of suggestions, which mainly refer the evil to exhaustion of soil, and recommend planting on new ground. But it is conclusively shown by an able writer, that the decrepitude of trees is just the same, on whatever soil they are planted.

A writer in the Philadelphia *Dollar Newspaper* says that after exhausting every other theory without satisfaction, he is led to refer the diseases of apple trees to *excessive pruning*.

There is no doubt great abuse of the knife. We never could see any sound reason in the doctrine that by cutting off the ends of limbs, the juices which would have gone to supply their growth will be arrested, and go to swell the volume of the fruit. This seems like cutting off one's fingers to strengthen the hand; and if it is an error, we cannot too soon abandon it.

In general terms, nature must be assumed to do its work rightly; and we may also assume that when we do violence to its laws, and seek to improve on the methods of growth and reproduction, we should work with gentleness and moderation. The wholesale hacking which is usual in our orchards and nurseries, may well challenge exception. When we transplant a tree from the nursery, we do violence to its natural growth; and some corresponding efforts of art seem needful to aid the tree in its first establishment. For instance, we cut away roots; it seems reasonable that we shall cut away the top, because there is less root than nature supplied at the

root, to sustain so much wood. Then, certain climates may make it proper to give or to take away from the limbs in the second year, according as sunshine or shade may be preferred. In New York state it may seem that open boughs and clear ground around the stem are required. In California, experience decides for dense leafage and low branches, as well to protect the fruit and stem from sun-scald, as to mulch the ground. We can understand that so much may be called for to assist nature, which has been disturbed in its working, and needs counter-nursing to restore the normal *status*. But when this is done, it strikes us that the knife should cease its mutilations.

It may be said that the whole system of raising trees in nursery beds, grafting with and exhausting probably the healthy vitality of a few choice varieties, forcing by irrigation, together with the process of transplanting, make a complication of violence to nature from which the plant should be expected to derive a delicacy of constitution, unfavorable to hardihood and longevity. And certainly, not enough of consideration is given to the well known law of physiology regarding the deterioration of stock from what the English call in-and-in-breeding. This law is doubtless the same for plants. The attempt to perpetuate and over-multiply choice families among men, by intermarrying near relations, gives an instance of this law. The progeny becomes imbecile or scrofulous. Now scrofula appears to be a quasi insect ravager, which preys only upon bodies weakened by disease. It is not unphilosophical to compare all insect ravages among fruit trees to the scrofula in animals and in men. The worm attacks where weak and diseased places invite it to easy work; and not unlikely the curled leaf in our peach trees—though resulting proximately from checked circulation by sudden chills—may be traced to a delicacy engendered by loss of tap-root, and with other causes connected with transplanting and mutilation. It is all idle to say that the tap-root is a supernumerary appendage, which ought to be cut off. On the contrary, it is beginning to be discovered that our orchard trees (especially are the peach tree and the pear so declared) should be raised from seed planted where the tree is to grow. In this climate the first great growth is expended in making tap-root, and this becomes ever after a pump-root to sustain the tree through the long droughts of our dry seasons, besides giving firmness to resist the top strain of our heavy winds.

The passion for buying large trees from the nurseries, is really in need of correction. You gain nothing by it. In three years, your plant of one year old will outgrow the plant that was two years old at transplanting; and the subsequent growth, hardihood and production will be every way in favor of the younger tree. The longer a tree is in the nursery before transplanting, the greater will be its mass and depth of root; and the greater the mutilation, unavoidable to the process of taking up. In the Eastern states they transplant trees in the nurseries every year, when it is desired to qualify plants of three and four years of age for safe transplanting. Evergreens, treated in this way, make an immense mass of fine rootlets, and are moved so that in favorable seasons they do not seem to know it. But in our dry season these root fibers would perish; so they do in the states, if a protracted drought befalls

them. Irrigation makes early decrepitude, because it forces the plant to wakeful work in the period which nature has assigned to torpid repose. There is no more consuming disease to the human mind and body than *vigilantia*, which is the deprivation of rest through inability to sleep.

If there is one law of nature particularly striking, it is the demand for change—for variation. We cross the breed of animals on this account. It is reasonable to assume that this law is for plants also. Whenever a run is made on any one variety, like the Mercer potato of the states, nature interferes to put a stop to it, by afflicting it with the rot. A Scotch farmer of eminent reputation, cured his potato crop of this disease (which seemed for a few years to defy all curative means) by planting alternate rows of a less desirable variety, and thus crossing the breed to the manifest advantage of both.

The climate of California exhausts the productive faculties, by the great crop it generally gives; and especially in our modern system of training trees, we may expect a proportionately early decay. Some of the old San Jose Mission trees, however, show that this law has exceptions, for they bear well in their fiftieth year; while many apple, peach and cherry trees of modern growth show symptoms of decay. It would seem a measure of safety to turn our attention moderately to raising seedling trees, not to be transplanted, with the hope that this return to nature's process will give us, after a time and by degrees, more hardy, and not perhaps less valuable, varieties of fruit trees.

ANTHRAX.



HOW A VINEYARD WAS PLANTED.—*Editor Culturist*.:—Your mistake of a comma in my communication under the above heading, has conveyed in some measure a different idea from that intended; for while I wished to show how much the plow might be made to assist the planting, I also wished to convey the opinion that my success mainly arose from my having strong cuttings with a piece of the two year old wood attached. This to me is evident, for in no other planting have I had such uniform success, even where much more pains were taken in planting, when only ordinary cuttings were used. In fact, the planting of some seasons has been so disastrous, I have come to the conclusion that vineyard planting on our dry soils, with rooted plants, is the safest, and taking the ordinary course of the seasons, the least expensive.

One of your correspondents inquires, "at what distance to plant his vines?" The most successful grower of my acquaintance plants at eight feet distance; and so far as observation goes, I think he is correct in his estimates of greater yield and lessened hand labor, from his free use of horses in their culture.

SONOMA.

UP COUNTRY.

SOMETHING ABOUT ROOTS.

Editor Culturist.—The interesting controversy in which you have taken part, in reference to the utility of deeply running roots, to the successful growth of fruit and forest trees in California, has had the effect to cause me to doubt the propriety of a practice which I have heretofore deemed essential to the development of the orchard tree, during the first two years after setting. It has been my invariable practice, on setting out my trees, to place the crown of the roots or the lower section of the body of the tree, no deeper in the soil than it had originally stood in the nursery row, and I believe this now to be the best practice; but, supposing it might, to some extent, aid in securing a continuance of moisture around the roots of the newly set tree longer than otherwise would be, I have practiced the earthing-up plan, or the throwing of an increased quantity of the soil towards and around the body of the tree, to be finally leveled down in the process of after culture.

I am frank to admit, I believe my practice to have been erroneous, for this reason: the additional quantity of earth over the roots of the trees had an undoubted influence in longer retaining the moisture near the surface after the spring rains had ceased, than would otherwise have been the case. The effect was to induce a corresponding growth of roots in the same relative position, or much nearer the true surface of the soil, than though it had not been thus raised above the proper level. During the leveling process these roots are necessarily brought much nearer the true surface than they otherwise would have been, and evidently much to their injury—being more exposed to surface drought than though the very opposite practice had been pursued.

The same effect is also produced upon trees where mulching is resorted to, in the use of any material by which the surface of the soil is much elevated above the general level. The bad effect upon the tree is visible immediately on the leveling down of the excess of soil so heaped around, in the wilting of the leaves during the heat of the day. So well satisfied had I become of the ill effects of the partial hilling up practice, that I determined to abandon it in an orchard of four acres which I set last spring. But I had no intention of adopting a directly opposite practice, but for a single circumstance which I will relate. Calling for a day at Oak Knoll, the home of J. W. Osborn, Esq., four miles from Napa city, my attention was arrested by the peculiar conformation of the surface of the ground around the trees of a newly set orchard. The peculiarity was this: It appeared as though the ground had been cross-furrowed with a single deep, heavy furrow, about two feet from the bodies of the trees, and the furrows left open.

On inquiry of the proprietor for his reasons for the practice, I was told that it was for the purpose of inducing a downward direction to the growing roots; that the depth of the furrow compelled the new roots to sink into the earth; that once having gone below the bottom of the furrow, the tree could never after suffer from drought, though never irrigated. Here was an idea new to me in the growth of roots, which I determined to avail myself of in the planting of my orchard, consisting of

apple, cherry and pear trees; and in setting the trees, my first care was to give to the ends of all the roots a downward direction, instead of nearly horizontal, as is more generally practiced. In covering the upper tier of roots, the soil, instead of being brought to a level around the trees, was left sloping in the same direction as the roots, to a distance of at least a foot beyond the ends of the same; as a consequence, when the roots grew, they were compelled to go downward, for they could not go horizontally without coming out of the ground.

As the dry season came on, the hollow formed by the slope given to the earth was gradually filled by the working given to the soil, till now its former level has been attained. To test the experiment to my entire satisfaction, I treated a single row of trees through the field upon the old plan, by increasing the depth of soil four or five inches around the trees to a distance of four feet, and bringing it to its proper level at the same time with the rest of the field. The result is so clear and satisfactory, that no man who looks upon the experiment can for a moment hesitate. The row of trees treated upon the old plan, is so perceptibly inferior, both in growth and apparent thrift, that it appears as though an entirely inferior lot of trees had been placed in that particular row.

All my trees, as set by either mode, did not survive their transplanting; but of such as did, not one of the trees set by the new mode has made other than a steady growth from their first beginning, whilst those set by the old mode, though starting finely at first, and making a fair growth, have entirely failed in the race. I believe here are these reasons in favor of the new mode: by it the roots are made to take a more downward direction, thus securing to them a greater amount of moisture than though nearer the surface, and on account of their depth, less likely to be affected by the action of sudden heat and cold, or the early fall rains, causing a premature growth or expansion of fruit buds. Their deeper position also enables me to work the ground more effectually around the tree without injury to the roots, than though they were nearer the surface. Hereafter I shall be found on the side of deep soil, deep plowing, and deeply running roots.

ANTI-IRRIGATION.

IRRIGATION.

THE subject of irrigation seems just now to be attracting more than its usual interest, inasmuch as many are of opinion that in most cases, even in California, it can be entirely dispensed with. In no case are we the advocate of surface irrigation upon any soils sufficiently moist to produce a full and perfect crop of fruits or vegetables without it. But we do know that there are thousands of acres in every county of this state, that to produce to their fullest capacity, require irrigation, or to be rained upon between the first of June and October. There is no country on the face of the earth, with a climate similar to ours, where irrigation has not been practiced from the remotest antiquity, and with beneficial results.

It is too late in the day to attempt to talk down irrigation as inapplicable to all

California soils. Some of the finest gardens and orchards in the state are those in which their cultivation was begun without resort to irrigation ; but which, as soon as it was adopted, nearly doubled their product, increasing the size and quality of fruits, and largely increasing the growth of wood. We could instance the pomological gardens of A. P. Smith, Esq., of Sacramento, the actual value of which is more than doubled by the advantages derived from a judicious irrigation. Neither mulching, nor the constant stirring of the surface soil around the trees, nor any other plan for retaining the moisture in the soil or adding to it, will compensate for the irrigation bestowed upon it. Repeated trials and well conducted experiments have established it as a fact applicable at least to that variety of soil.

But irrigation is abused, and injury sustained, from a want of a proper knowledge of its right application, and particularly as regards the proper time, the quantity of water and the mode of applying it ; and it is this want of knowledge upon the subject, and misapplication of the theory and practice of irrigation, that is causing a few to condemn it altogether. Nothing is more certain than this ; if you turn on a flood of water around your peach trees at the time they are making or hardening their stones, you will most assuredly bring three-fourths of the fruit to the ground in less than ten days ; but it does not follow from this that irrigation is always an injury to fruit trees. On the contrary, no better fruit is grown in California, if we can rely on the judgment of those who eat it, than is produced in Smith's garden, by his system of irrigation. We should not, therefore, wholly condemn a system the application of which we do not fully understand, because not practiced or required upon our own soils.

Nothing is more true than that the simple application of the water to the land is, as yet, not correctly understood by all. It is not necessary to keep up a continued flooding of the land from June to October ; this is not what we mean by a judicious irrigation ; on the contrary, there is hardly an orchard in the state or any variety of soil that would be benefitted by more than two waterings in a season, however easily or cheaply applied. Two thorough waterings at the proper time and in the proper mode, are all that is necessary, all that experience so far would point out as judicious. But even then, the application of the water alone is not all there is of irrigation. It requires a certain management or working of all irrigated soils to derive the fullest benefits therefrom at the least cost. At least one-third of the good effects of a single watering are secured and saved by the simple working up to a fine tilth the surface of all irrigated soils, as soon after the application of the water upon the surface—if this be the mode of application—as it can be worked without sticking or packing.

The effect of water upon most soils, if permitted to flow but a short period, is to form a coating more or less smooth and compact over its whole surface, particularly if the water used deposits the least sediment. In this case, as soon as the water is dried off or absorbed, this coating of the soil presents comparatively a smooth, compact surface to the sun, and in this condition being a much better conductor of heat than a rough, porous surface would be, the moisture the soil received from the water

ing is much more rapidly exhausted by evaporation, than though the surface had been raked over and rendered light and porous, as soon after the watering as the ground could be properly worked, which is from one to three days, depending upon the nature of the soil. We are entirely opposed to deep and frequent stirrings of the surface soil around fruit trees during the summer months, though a cotemporary of six or eight years' experience and observation may differ with us on this point; still, we have ever advocated mulching as peculiarly applicable and beneficial to California soils, but it need not be deep or kept constantly stirred. The reducing of one inch deep of the surface soil to a fine and porous tilth after irrigation, breaking up the smooth compact conductor of heat to the soil below, is of itself equivalent to a mulch; it is in fact a mulch, preventing the escape of moisture, and consequently the ground from cracking. If you go deeper than an inch or two, you necessarily disturb, to their injury, numerous spongioles and rootlets, that to a great extent fill the surface of all irrigated soils.

Our own view of the matter then is this: we would much prefer to have the soil of our orchard grounds and fruit gardens of such a nature as to require no surface irrigation, but every day we are more and more convinced that a judicious irrigation is the only alternative to the making of thousands of acres of good orchard grounds available for fruit growing, and in many situations extensive vineyards, that without it would be illy adapted to such purposes. We are not, therefore, prepared to declare "artesian wells a curse," or irrigation "worse than useless," until the former are made to cease their flow, and the latter totally abandoned.

THE METAL CROP OF THE WORLD.

AN examination of the crop of metals produced in the great harvest field of our globe, leads to some striking and interesting facts. Until the discovery of the gold fields of Australia and California, the crop of precious metals throughout the world maintained as uniform a production as the cereals or other crops, and even since these discoveries the rates of production, so suddenly and enormously expanded, have subsided into regularity. The amount of glittering dust shipped yearly from San Francisco, Melbourne and Sydney is now as accurately estimated as cotton, wheat, tobacco, or any of our great staples.

Mr. Whitney's table of metallic produce of the world for the year 1854, presents some interesting facts. Russia in that year is supposed to have produced 60,000 pounds troy of gold, and 58,000 pounds of silver. Of copper, she produced 6,500 tuns, 4,000 tuns of zinc, 800 tuns of lead and 200,000 tuns of iron. The disproportion here between the precious and useful metals is very striking, as will be seen by a comparison with Great Britain. The gold of Great Britain in 1854 is estimated at one hundred pounds troy; silver, at 70,000 pounds; tin, 7,000 tuns; copper, 14,500 tuns; zinc, 1,000 tuns; lead, 61,000 tuns; iron, 8,000,000 tuns. In the same year, the United States, including California, is supposed to have produced

200,000 pounds troy of gold; 22,000 pounds of silver; 1,000,000 avoirdupois of mercury; (Great Britain and Russia producing none at all) 3,500 tons of copper; 5,000 of zinc; 15,000 of lead and a million of tons of iron.

Mexico takes the palm in silver, the product of 1854 amounting to 1,750,000 pounds troy. Chili ranks next, at 250,000 pounds; Ecuador and New Grenada are put down at 130,000 pounds; Bolivia the same; Spain 125,000 pounds; and so on; Brazil closing the list with only seven hundred pounds. Prussia and the Hartz district yield the same, 30,000 pounds each. Saxony gives 60,000 pounds; France 5,000 pounds; Italy, Africa, the East Indies, Southern Asia and Cuba do not appear in the silver list.

In the gold column, we find the United States taking the lead at the head of 200,000 pounds; next, Australia, 150,000 pounds; Russia, as before stated, 60,000 pounds; East Indies and Southern Asia 25,000 pounds; Ecuador and New Grenada 15,000 pounds; Mexico 10,000 pounds; Brazil 6,000 pounds; Austria, 5,700 pounds, and Africa 4,000 pounds. Spain brings only forty-two pounds; the Hartz district gives but six pounds, and poor Sweden a miserable two pounds. Norway, Belgium, Prussia, Saxony, Switzerland, France, Italy and Cuba, make no return in the gold column.

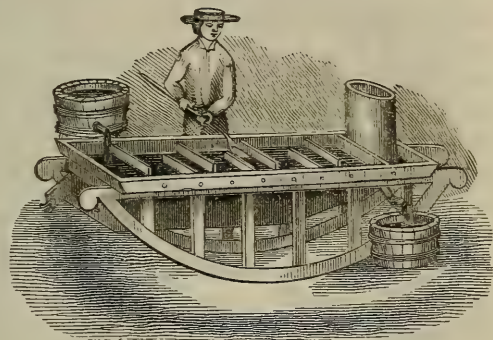
The great country for mercury is Spain, which produced in 1854, two and a half millions of pounds. Next comes the United States, with a million of pounds as we have seen; then Austria, with 500,000 pounds. The tin crop is larger in Great Britain than anywhere else on the globe. To her 7,000 tons, the East Indies and Southern Asia bring 5,000 tons; Peru 4,500; Saxony one hundred tons; Austria fifty, and Spain ten tons. Great Britain also surpasses all other countries in the production of copper, and will also continue to do so until some facile process of making marketable the vast masses of native copper which abound in Lake Superior region, is discovered. Next after Great Britain comes Chili, with 14,000 tons of copper; then Russia, then Australia and Oceania, producing 3,500 tons; the same in the United States; Austria 3,300 tons; the East Indies and Southern Asia with 3,000 tons, and so on, Saxony closing the list with bare fifty tons. France, Switzerland, Mexico and Brazil produce no copper at all—at least, none is set down in Mr. Whitney's table. Cuba produces 2,000 tons, Africa only six hundred tons.

From Mr. Whitney's letter, it appears that Great Britain takes the lead of the United States, not only in silver, tin, copper and iron, but in lead also. The product of metal in 1854, in Great Britain is set down at 61,000 tons against 15,000 tons in the United States. We had supposed that the lead mountains of Missouri would have given a different return. Even Spain produces twice as much lead as the United States, the yield in 1854 being put down at 30,000 tons. Prussia produces 8,000 tons; Austria, 7,000; the Hartz district 5,000 tons; Saxony 2,000 tons; France 1,500 tons; Belgium 1,000 tons; Italy five hundred tons, and lowest of all, Sweden two hundred tons. As regards the iron crop, we have seen Great Britain and the United States heading the list—the former with three and the latter with one million of tons; then Belgium 200,000 tons; Prussia 150,000, and so on, Norway

bringing up the rear with 5,000 tuns. The grand totals of the metallic produce of the world for 1854, as assumed by Mr. Whitney, are: Gold, 479,950 pounds troy; silver, 2,812,200 pounds troy; mercury, 4,200 avoirdupois; tin, 13,660 tuns; copper, 58,850 tuns; zinc, 60,550 tuns; lead, 133,000 tuns; and iron, 4,792,000 tuns.—*Exchange.*

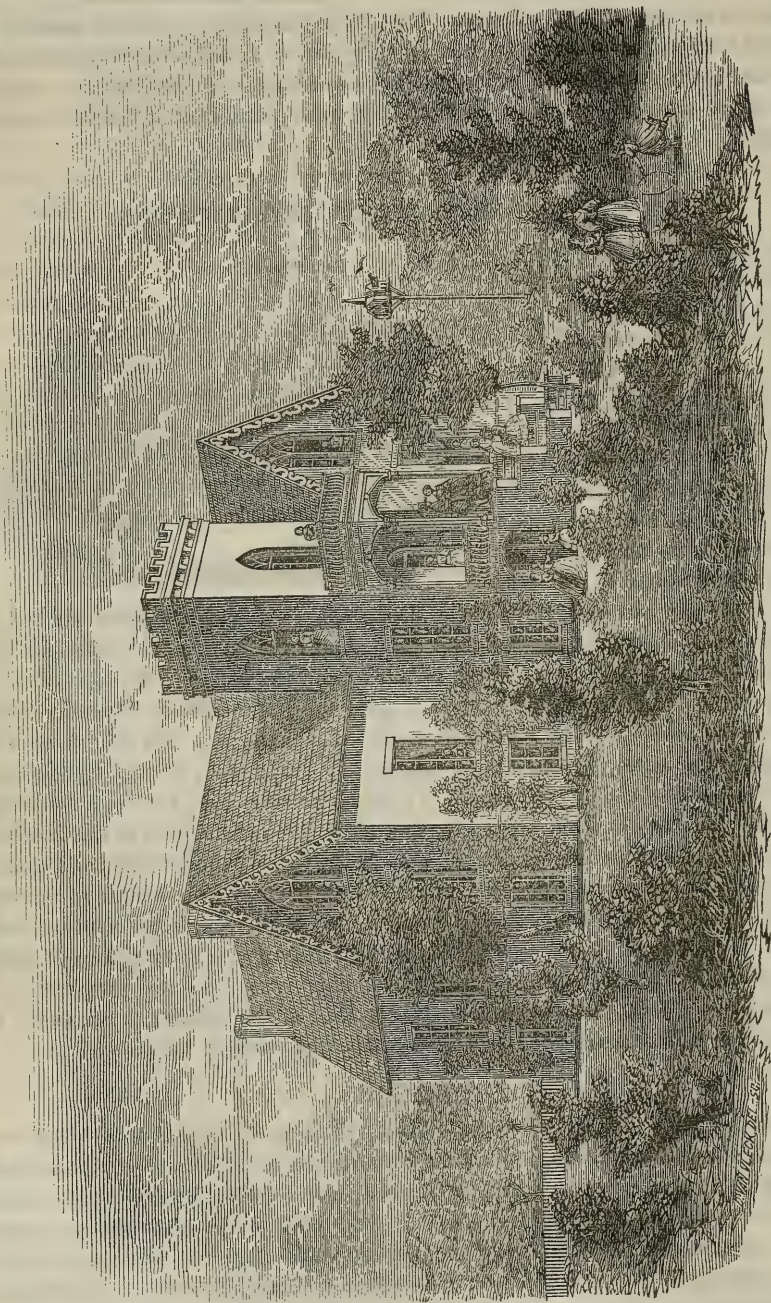
COOK'S PORTABLE SUGAR EVAPORATOR.

OUR engraving illustrates this new apparatus for manufacturing sirup and sugar from the juice of the Chinese sugar cane. It is a novel contrivance for the purpose, was patented last year (June 22d, 1858) and considerably used in Ohio last season. Certificates from those using it, recommend it in the highest terms, as both expeditious and superior in its working.



The main features of its structure are a shallow pan some three inches deep, with parting ridges about six inches apart, requiring the sap in passing from end to end over it, to travel right and left around the edges. The pan is slightly inclined upon the rockers; the sap is fed on at the upper or highest end while there is a good fire in the furnace beneath; in its zig-zag course to the rear or lower end, it passes over the fire in a thin sheet, and consequently the watery portion of the sap rapidly evaporates; so that by the time it reaches the other end of the pan, it is reduced to sirup and runs in a continual stream into the receiving tub. The sap, as it passes around the ends of the dividing ridges, travels over a portion of the pan outside the furnace underneath, and consequently partially cools; here the scum rises, and is taken off from section to section, so that it is well cleansed when over the course. Such, in brief, is the structure and theory of its working. Parties certify to making from forty to sixty gallons of sirup with it per day. The pan, furnace and whole thing is so light that two men can readily remove it from place to place by taking hold of the handles at the end. If it proves what it is recommended, it will soon displace common kettles and pans.—*Wisconsin Farmer.*

SORGHUM CIDER.—The Nashville (Tenn.) *Homestead* says, that besides the excellent sirup and sugar made from the Chinese sugar cane, there is yet another article obtained from it which is of pleasant taste and doubtless healthy in its consequences. It is obtained by putting the expressed juice of the cane into any clean wood or glass vessel, allowing it to stand ten or twelve days and ferment, when it assumes the appearance of limpid water, and is fit for use. The flavor is similar to our best cider.



VIEW OF THE STOCKTON FEMALE SEMINARY.

STOCKTON FEMALE SEMINARY.

THIS beautiful building is located five or six blocks north of the court house, in the city of Stockton, in one of the most beautiful suburbs in the state; surrounded as it is by the old trees and beautiful improvements, it reminds one of the old institutions of the East. It is a prominent structure, built of brick, fifty-two feet in length by forty in breadth, and in its architectural design, finish and adaptability for the purpose intended, is highly creditable to its designer—the principal of the institution. It is surrounded by spacious and ornamental grounds, affording ample privileges for recreation and healthful exercise.

This institution is under the management of Dr. C. Collins, assisted by his accomplished lady and other competent teachers. Dr. C. brought an enviable reputation with him to the institution, which he has fully sustained. There is no place in the state where pupils will be more comfortable, or enjoy better facilities for obtaining the *right sort* of an education than in the Stockton female seminary.

ARTESIAN WELLS.

Editor Culturist:—It is remarkable to see the changes a man's mind may undergo upon a particular subject, during very short intervals. But a year or two ago, a present cotemporary of yours was in ecstasies at the result of the attempts to procure water at San Jose and other places from artesian wells. We were to have the entire of this section of our state one beautiful, ever verdant landscape, sparkling with fountains; and he was rejoicing in the superior advantages to result to the agriculture of this district from an abundant supply of water for *irrigation*. But now that same *mind* declares "artesian wells a curse," and "irrigation worse than useless." If this be true, why not plug up the artesian wells? it can easily be done, far more so than they were bored. But who will do it? Was the thing ever done in any country?

I believe the artesian well everywhere a triumph of mind over matter, and one which cannot but result to the good of those who are successful in procuring a supply of water from such sources. Nor do I believe the least ill effect can result from their flow to any country in which they abound. To say, because the pent up reservoirs deep in the earth are tapped, and the water brought to the surface, that, necessarily the whole earth, to the depth of the reservoir, will become dry and sterile in consequence, is saying more than can be substantiated by precedent or fact. If our soil is drier than it was three years ago, it is only saying of this section of the state what can be said of many others, where no artesian wells are found. California has always been subject to periodical seasons of wet and drought, and these seasons have at times extended to years, when a change occurs, and the opposite condition of climate and consequent humidity of soil is the result. When we

see the owners of artesian wells stopping them up and preventing the flow of water therefrom, then, and not till then, shall we be induced to believe them a "curse."

In reference to irrigation—the good and bad results of the practice—I think any man, who, because he happens to have land that does not require it, assumes the position that it is useless and even injurious in all cases, is altogether behind the times, and knows but little of the subject he would treat. Why, how long is it since the editor of the *Farmer* was arguing to the effect that, when the water now conveyed by our mining canals was no longer needed for mining purposes, it would be equally if not even more valuable for irrigation? But now, irrigation is all wrong and "artesian wells a curse." With one week's issue, mulching and frequent stirring of the soil is recommended as a means to retain moisture near the surface, in order to encourage the growth of surface roots; and in the next we are told that irrigating the surface forces the tree to the production of a tap-root or deeply running roots; now which am I to believe? and which class of roots does a sufficiently moistened surface soil encourage? This is a question of importance to the fruit-grower, as different opinions are held among the most intelligent tree growers, as to whether, in our peculiarly dry climate and soil, if unaided by irrigation, roots of trees should be encouraged to run near the surface or penetrate deeply the soil. In my own mind I have become satisfied from a six years' cultivation of nursery trees in California, and ten in the Atlantic states, that it was for the want of sufficient moisture in the surface soil, that all trees in California, more than in the Atlantic states, were prone to send their roots deeply downward. But if just the opposite of this is true, then is the theory of the *Farmer* editor all right, and my experience and observation all wrong.

IRRIGATER.

SAN JOSE, Aug. 20th, 1859.

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WHEELER & WILSON'S SEWING MACHINES.

THE unbounded popularity of these machines is rapidly passing to a proverb. Under the notice we gave some months ago, that we would attend to the purchase of anything agricultural, horticultural or mechanical for our patrons free of charge, we have received orders for sewing machines, but in every instance have been instructed to procure Wheeler & Wilson's. Now we have never used personally any description of sewing machine made of wood, iron and steel, as Wheeler & Wilson's are; but we have a great many friends who are using them, and they pronounce them the best in use. An order from Diamond Springs, El Dorado county, just received, reads as follows: "Please examine personally and procure for me one of Wheeler & Wilson's best family sewing machines, and get it for as little money as you can. Inclosed is one hundred and fifty dollars; forward by W. F. & Co. without delay. Remember Wheeler & Wilson's, I want no other. Yours truly."

"A critical examination of these machines under movement, will convince the most skeptical that they possess advantages surpassed by no other; that among these

advantages are elegance and simplicity of construction, and consequent freedom from derangement and need of repairs; durability; unexampled ease and rapidity of operation; noiseless movement; beauty of stitch and firmness of seam; economy of thread; applicability to a variety of purposes and materials.

"They are applicable to every variety of sewing for family wear, from the lightest muslins, to the heaviest cloths. It works equally well upon silk, linen, woolen and cotton goods; seaming, quilting, hemming, gathering and felling—performing every species of sewing, except making button holes, stitching on buttons, and the like. Various appliances are furnished for regulating the width of hems. The hemmer is an appendage by which the edge of the fabric, as it passes through, is turned down and handsomely stiched."

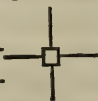
The *Scientific American* says of this excellent machine: "We are having a great many inquiries for sewing machines from various parts of the country, and as we cannot conveniently reply to them all by mail, we have thought it proper to state our opinion in regard to them in this public manner. We have used Wilson's patent, manufactured by Wheeler & Wilson's manufacturing company, number 505 Broadway, and we can say in regard to it, that it is without a rival. It is simple, not easily put out of order, and in point of effectiveness and finish, no other machine stands ahead of it. We state this much in regard to this excellent machine, upon our own responsibility."

GOPHER CATCHING.

DIGGING trenches one foot wide and deep, and placing pitfalls of tin or wooden boxes in their bottoms, are becoming popular as gopher traps; the animal following along the trench till it heedlessly drops in. Mr. Marston, of Centerville, catches numbers of them nightly, by simply sinking the cans or boxes—which ought to be sixteen or eighteen inches deep—even with the surface of the ground, in the vicinity of their abodes or runways, without any ditch at all. Somebody ought to have thought of this before, as it is no unusual thing to find them in newly dug post holes.

Now we will simply suggest an addition to the pitfall, consisting of four boards, a foot wide and twelve or fifteen feet in length, placed on edge at right angles with each other and terminating at the sides of the pitfall, as here illustrated:

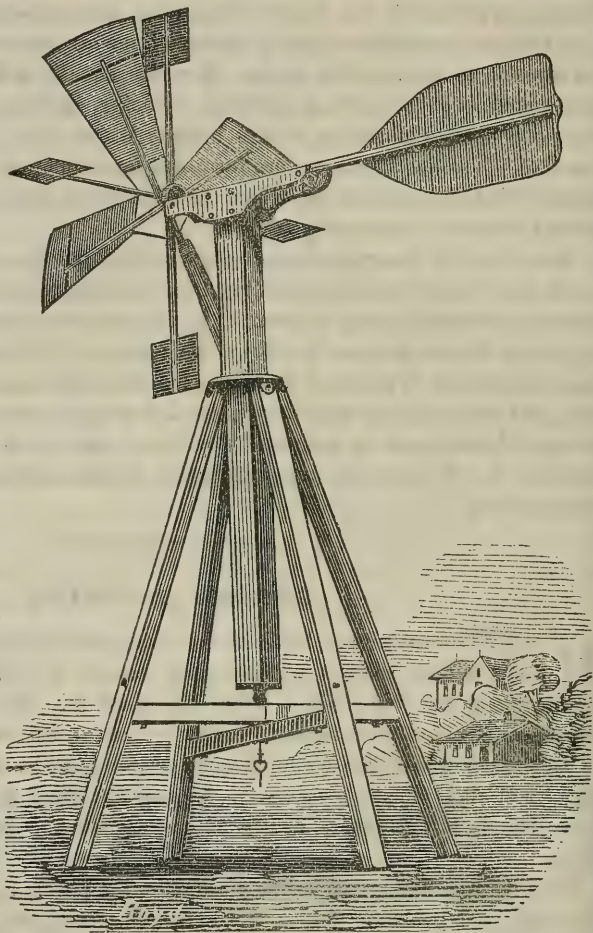
If such an arrangement would not serve to guide the animals into the pitfall, it would be because they would prefer jumping over the boards to following along the sides.



IOWA pays her agricultural societies \$15,000 per year; Massachusetts, \$12,000, and New York \$8,000. A good text for those wise legislative gentlemen who tried last winter to reduce the appropriation for our own society to \$500.—*Wis. Farmer.*

TUSTIN'S SELF-REGULATING WIND WHEEL.

WE here present our readers with an engraving of a newly invented wind wheel, which for simplicity of construction, strength and effectiveness, is said to surpass every other. It is the product of years of study devoted to the one object, of combining a perfect self-regulator with simplicity of construction and strength of movement. How well the inventor has succeeded in attaining his object, the invention itself will demonstrate. It is the wheel now so generally used at Benicia, and so often the subject of comment by strangers visiting that city. The regulator, so perfect in principle, so simple and yet so effective, it is surprising that it had never been discovered and brought into use for regulating the speed of wind wheels long ago. Mr. W. I. Tustin, of Benicia, is the inventor, and the



builder of the first windmill in California. For years he has steadily applied himself to the perfection of his wheel, and has succeeded in producing probably the most perfect combination of parts, constituting a perfect self-regulating wind wheel, ever before invented. The cost of the wheel and sustaining structure, varies from seventy-five dollars to two hundred and fifty dollars each, depending on size and finish. They may wear out in time by constant use; but, owing to their extreme simplicity, are less liable to get out of order than any other self-regulating wind wheel known.

Editor's Repository.

THE grand feature of the month of September, with our industrial classes, and all who feel interested in the prosperity of California, will be found in the numerous fairs—state and county, agricultural and mechanical—that in succession will occupy nearly the whole of the month. From the thirtieth of August to the third of September, five days, will be held at Marysville the agricultural and mechanical fair for the northern district of California. The state fair, held there last season, has awakened an interest in that section of the state never before felt. Indeed, agriculturists and mechanics everywhere seem this year more alive than ever to the benefits resulting from these annual social gatherings.

The Sonoma county agricultural society's fair opens at Healdsburg, on the thirty-first of August. Sonoma county is one of the finest agricultural, fruit, grain and stock-growing districts of our state; it embraces a large portion of the Russian River valley country, the great corn-growing section of California, and having the men and material to make an exhibition creditable to the county and all concerned, it will be done.

On Tuesday, the sixth of September, will be opened at Musical Hall, in San Francisco, the third annual fair of the California horticultural society, to continue four days. It is at this fair—which partakes so largely of the nature of a state institution as to be often confounded with that of the state agricultural society, except that the former is purely horticultural—that large numbers of those who are about to engage in orchard planting, resort for the purpose of examining into the merits of the different fruits, as regards quality and adaptation to certain soils and localities; as well as to ascertain, by inspection of the fruits, where they should go to purchase their nursery trees. There can be no better recommendation to a nursery, than the fruit that trees from such nursery can and do produce.

The pomological convention, which is a part of the society's proceedings, or originating therewith, is a matter of special interest, as its chief feature is the discussion of topics directly connected with the fruit-growing interests of the state. It is on this account that a large attendance is annually secured. For two years past, this society has held its fair in connection with that of the Mechanics' Institute—this year it will be entirely disconnected.

The fair of the California state agricultural society for 1859, opens at Sacramento on the thirteenth of August, and is advertised to continue ten days. From the *Monthly Journal* of the society for July, we extract the following in relation to arrangements, etc.

“Ample hotel arrangements are being provided by the citizens for the convenience of visitors, at the usual current charges.

The hall of exhibition is of ample dimensions to ensure the best display of materials.

Experience has suggested many improvements which will, we trust, make this fair highly satisfactory to exhibitors, and interesting to visitors. Every good citizen who wishes well to the producing interests of the state, is expected to give aid to this fair.

Let every one who can send something to aid the general interest; let all producers meet on this occasion, each one bringing in his gathered experience, and let us have a free interchange of views and sentiments.

Horticulturists and agriculturists, cattle-men and miners, all have a vast deal of experimental work to do to save themselves from losses and to turn their industry to the best account.

We have more to learn than in the old states, because everything is different, and experiments are so costly as frequently to involve danger of ruin.

There is scarcely a man who comes to the fair, who will not make ten times his expenses, by finding out by communication with his fellow-producers, the decisive results of some theory he was about to make a risk of unknown outlay to test.

The social benefits of being brought together around a center of common attractions cannot be over-estimated.

The main room of the building is one hundred feet, without a column to obstruct the view. Its main ceiling is thirty feet high, with a central vaulting forty-two feet high.

The lighting and ventilation will be complete, and all passage-ways will be of ample width. There is not a room superior to it anywhere for such a purpose. It will exhibit what there is to display to the best possible advantage.

The first floor is of the same ample dimensions, with sustaining columns; and it will give to visitors the fullest opportunity to examine in detail and in good light every part of each machine. The steam arrangements will enable every exhibitor to show his machine in full working operation. It is intended to give this department a deeper interest than usual.

Makers are requested to explain, in large cards attached, the general uses of their machine, and generally to inform visitors of its mode of production.

The want of this simple provision takes away a large part of the interest, which visitors would otherwise enjoy.

Every means will be taken to give to visitors all the information that can be desired, by attaching cards of explanation to every article. If it be worth notice at all, it is worth this elucidation. Fountains of cool drinking water will flow freely about the rooms, which will also give refrigeration and moisture to the air.

The cattle ground will be in close proximity to the hall. Cattle will be exhibited with the flank to the spectator, giving more interest and satisfaction to this useful department of the fair.

The committees of the society have been busy canvassing among producers in every department, for contributions to the fair. They have received everywhere the most flattering encouragement; so that they feel authorized to promise such an exhibition as never was seen before in California. The time is too short for all to be called upon. We entreat all friends of the encouragement of industrial progress, to call at the secretary's office for whatever information they desire. And we entreat them, one and all, to send each something worthy of display to the fair."

The Alameda county agricultural society will hold its second fair of the season at Oakland, opening on the fourth of October. This county has attained an enviable notoriety as the first in California to introduce and successfully conduct two fairs in one season; one for the exhibition of early fruits, vegetables and flowers, and a second for autumn fruits, grains, vegetables, dairy products, mechanical implements and products of home industry generally. They will have a good fair in Alameda county.

The third annual fair of the Santa Clara valley agricultural society will be held at San Jose, commencing on the eighteenth of October, and continue four days. The reputation of Santa Clara county, for its unequalled fruits and farm products generally, will secure for its fair an interest exceeded by no other section of the state. We shall be there.

The Contra Costa county agricultural society, recently organized, will hold its first fair at Martinez, commencing on the 12th of October. This county embraces a large quantity of excellent grazing, fruit and grain lands. The beautiful valleys of Alhambra, San Ramon and others of this county, are not surpassed by any other in the state for fertility and varied products; and the exhibit made at their fair cannot but be highly creditable as a first attempt.

AGRICULTURAL FAIRS.—The question is not, Who goes to the state fair this season? but it is, Who is there that will be found willing to stay at home? All the cows, pigs and poultry in the state cannot be taken there, and somebody must therefore stay at home to take the proper care of them. The fact is, these state and county agricultural fairs are becoming more and more every year, grand *social* institutions, as well as opportunities for the comparison and sale of the finer products of our fields, stock grounds and work shops. The farmer and mechanic, with their wives and children, once a year, from all parts of the state, assemble at the place of holding the state fair; new acquaintances are formed and old ones renewed; and though competition and rivalry are prominent features, yet we generally find them based upon honorable and patriotic motives. It is the one only great annual gathering of the industrial classes of the state, district or county, at which it can be said politics or religion can make no divisions. The man who first laid the foundation for agricultural fairs on this continent, was Elkanah Watson, in 1810, and it ought to entitle him or his memory to the gratitude, of his countrymen.

But there are croakers in all communities and upon all subjects, so there are those who look upon fairs as immoral in their tendencies—that as much harm as good results from them; that as many go away displeased as pleased; that disturbances of the peace and breaches of morality occur that would not, but for the incitants inseparably connected with such gatherings. Well, what of it? Cannot the same be said of fourth of July and camp-meetings? We have known instances of the sale of liquors so near places of public worship, that those who were present ostensibly for the purpose of attending divine service, from the effects of the liquor imbibed or other cause, went to cutting and killing each other; but such occurrences are no argument against assemblages for divine worship.

A writer in the *Southern Homestead* very aptly remarks: "We must not be too censorious. Disturbances are not the necessary accompaniments of fairs any more than they are of divine services. We cannot afford to abandon every institution on account of its liabilities to abuse. And the same answer can be made to objections to farces, sweepstakes and other unbecoming performances—they are not at all necessary, and fairs would do a great deal better without them. The public generally disapprove of these redundances, and they are fast passing away. Whenever fairs become a nuisance, public sentiment will very soon demand their discontinuance, and its voice is not often unheeded. Although they may be an objectionable feature in an agricultural exhibition occasionally, it is very rarely of sufficient magnitude to keep the most scrupulous away. We would rejoice to see a more lively interest taken in fairs generally."

Sacramento, from its geographical position, is the best point in the state to call out the largest attendance to an agricultural fair, and we have no hesitancy in saying the fair of this year—to commence on the thirteenth of September—will be more numerously attended and combine more of interest to those who do attend, than any that has preceded it.

LATE KEEPING APPLES.—By just simply expressing a doubt of the late keeping qualities of California apples, as compared with those of Oregon, which we did in former numbers of the *Culturist*, we were very innocently the cause of one ludicrous phenomenon and one fact. The editor of one of our weeklies was scared from his propriety and came near to desperation, because he believed that apples would be produced possessing the desired quality, though himself unable to say where such apples could be found. The *fact* elicited by our doubt is this: three or four varieties of apples have already been brought to light that possess just the quality so much desired and which the public might have remained ignorant of for years, but for the doubt which we had the frankness to express.

We have still on hand, August 21st, four varieties of last year's growth, all sound yet, and bid fair to remain so for weeks. The public will be advised through the *Culturist* where the trees, at the proper time, can be obtained; and this, with the fact that such apples and trees can be procured by all who want them, is the result of the "injustice to California" that we were charged with by the "Colonel" of the *California Farmer*.

PACIFIC AGRICULTURAL SOCIETY.—By this name is known the agricultural society of San Mateo county. It was but recently organized, and its first fair will probably be held some time in October. Its prominent feature, as differing from most of our agricultural societies, consists in its holding, at least once a year, a market fair for the sale and exchange of whatever articles the members of the society may exhibit for such purposes.

We have no doubt the society will prove a success, and we commend its sale or market fairs to the especial attention of Californians, as some of the finest stock in the State is found in San Mateo county. The officers of the society are Hon. T. G. Phelps, President; John Cumming, 1st Vice President; D. W. Connelly, 2d Vice President; J. M. Curtis, Secretary; Geo. H. Howard, Treasurer; D. S. Cook and R. J. Weeks, Directors.

El Dorado county agricultural society, quite recently organized, will hold a fair, we believe, at Coloma, commencing on the first of September. This really mountain and mining county (though possessing a large area of fine agricultural lands adapted to the cultivation of the cereals, vineyards and orchards) has long been celebrated for its superior fruits. The gardens of Coloma and vicinity have produced peaches that have taken the premiums at our state agricultural and horticultural fairs over the best of the products of the lower valleys. We are glad to hear of the formation of the society, and predict a favorable result to their first efforts at fair holding.

REDDING'S SEEDLING NECTARINE.—We were recently presented, by Dr. Trask, of this city, with some very beautiful specimens of a variety of nectarine, from the grounds of B. B. Redding, Esq., of Sacramento. It is a seedling variety and, though not a large fruit, possesses sufficient merit to entitle it to a place in our catalogues of approved varieties. Of medium size; form, round; color, a greenish yellow, mottled with red upon the stem side; a beautiful fruit, and possessing a very delicate flavor for a nectarine, which, to our taste, is seldom found equal to the peach, though but a variety of this fruit—*Amygdalus persica*—it is probably the most prolific variety known, and an annual bearer. The original tree is now four years old; and incredible as it may seem, it nevertheless positively produced last year one and a half bushels of fruit; and this year the perfectly enormous quantity of over five bushels. There is a California fruit story for you, but it is a true one.

TOLER'S SEEDLING APRICOT.—There must be something in our California soil and climate, peculiarly favorable to the production of new and choice varieties of fruits from seeds. Every year new seedlings are brought forward, claiming superior excellence over the fruits from which they originated; and though we are not always disposed to award to such the distinguished merit claimed for them, still it is very well, we believe, to bring such fruits to the notice of the public, that an early decision may be rendered, based upon merit by comparison, as this is the only way by which it can properly be arrived at. W. P. Toler, Esq., of San Leandro, left with us a number of very beautiful specimens of a seedling apricot, of his own raising; and without claiming any particular merit for it, desired us with others to test its quality and pronounce upon its comparative merit as a new variety.

We have done so; and it was the unanimous opinion of the committee that, as a seedling apricot, it is a valuable acquisition to our number of best varieties. Size, large; form, oblong with a deep suture upon one side; of a deep golden color inclining to red upon the sunny side; flavor, mild, with the slightest taste of acid in the skin only. But what we believe will particularly give it a value over other varieties, is its late maturity. If on trial in other localities, it shall prove as late as where it originated, it must become a decided favorite.

OUR FRONTISPIECE.—We intended to have given an engraving of the state fair building at Sacramento, as our frontispiece for this month; but as late as the twenty-seventh of August it was not near enough to completion to enable us to obtain a satisfactory photograph from which to make our engraving.

THE COLLEGE OF CALIFORNIA.—Our frontispiece engraving will present to our readers a correct view of the buildings lately erected for the PREPARATORY DEPARTMENT of this Institution.

It is situated in Oakland. The location is excellent, combining healthiness and retirement, with sufficient centralness and facility of access. The grounds consist of four entire blocks of land covered with trees and inclosed.

The academy hall contains a large and elegant school room and recitation rooms, and the Mansion House is well finished and furnished, and will accommodate about forty boarders in the family. It is under the superintendence of Mr. and Mrs. Holt, and the school is under the charge of Rev. Henry Durant, the Principal, aided by three permanent teachers and two assistants. The school is in a highly prosperous condition. Its object is not only to fit classes for college, but to give instruction in all the branches usually taught in high schools and academies.

FLAG STAFF, AGRICULTURAL.—Dr. L. H. Bascom and Judge McRae, a committee of the state agricultural society, to visit and report upon the condition of the agriculture of Oregon and Washington territory, have just returned. They will doubtless make favorable report of what they saw, as the agricultural capabilities of that section of the Pacific coast are known to be excellent.

The committee brought down a flag staff of Washington pine, from Steilacoom, one hundred and twenty-five feet in length, fourteen inches only in diameter at the but, and four inches at top. It was presented to the committee by Capt. Dall, of the steamer Northerner, and will bear the U. S. flag at the state fair.

POTATO PUDDING.—Mrs. Mudlaw gives the following recipe for potato pudding, which she says she can recommend. "Take boiled taters, smash 'em, add grease and sugar, and bake." On being asked "how much sugar do you take?" Mrs. Mudlaw replies:

"Well, that depends altogether on whether you calculate to have saas for it—some like saas, you know, and then again some don't; so when I calculate for saas, I don't take so much sugar; and when I don't calculate for saas, I make it sweet enough to eat without saas. Poor Mr. Mudlaw was a great hand for pudden-saas. I always made it for him—good, rich saas. I could afford to have things rich before he was unfortunate in business." (Mudlaw went to states prison for horse stealing). "I like saas myself, too, and the Curnel and the children are all great saas hands, though Miss Philpot prefers the pudden without saas, and perhaps you'd prefer it without; if so, you must put in sugar accordingly. I always make it a pint to have 'em sweet enough without saas when they're to be eat without.

A NEW BOOK.—We find upon our table, "the Surveyor's and Engineer's companion; being a treatise on mathematical instruments, an improved method of telescopic measurements, tables, formulas, etc. A valuable book, by William Schmolz, San Francisco.

THE HESPERIAN.—This elegant monthly makes its appearance for September a little in advance of us, giving us an opportunity of saying what we please about it without waiting a month to do it. Mrs. Day is evidently determined that the *Hesperian* shall not lack in varied interest; so this month she presents her patrons with a beatifully colored plate of one of California's sparkling wild flowers, the *Lilium Pardalium* (Kellogg) or Leopard lily, which alone is worth the cost of a volume.

In point of literary merit, the September number surpaasses any that has preceded it. For practical, industrial usefulness, the *Culturist*; for taste, elegance and interest, the *Hesperian*.

THE *Atlantic Monthly* says that "woman is a link between earth and heaven." So is a sausage tossed into the air.—*Louisville Journal*.

METEOROLOGICAL TABLE,

For Sacramento, California; being an abstract of Observations made during the month ending July 30th, 1859; Lat. $38^{\circ} 34' 41''$, N.; Long. $121^{\circ} 27' 44''$, W. Height of the lower surface of the mercury, 41 feet above the sea at San Francisco. The observations are made three times a day conformably with the hours adopted by the Smithsonian Institution. The indications of the barometer are given corrected for capillary action, and reduced to the temperature of 32° Fahrenheit, but not corrected for its height above the sea level. The rainy days are included under the head of cloudy and foggy, and are also put separately to show the number of days on which rain fell during the month. The force of the wind is estimated and registered in figures from 0 calm to 10 a hurricane.

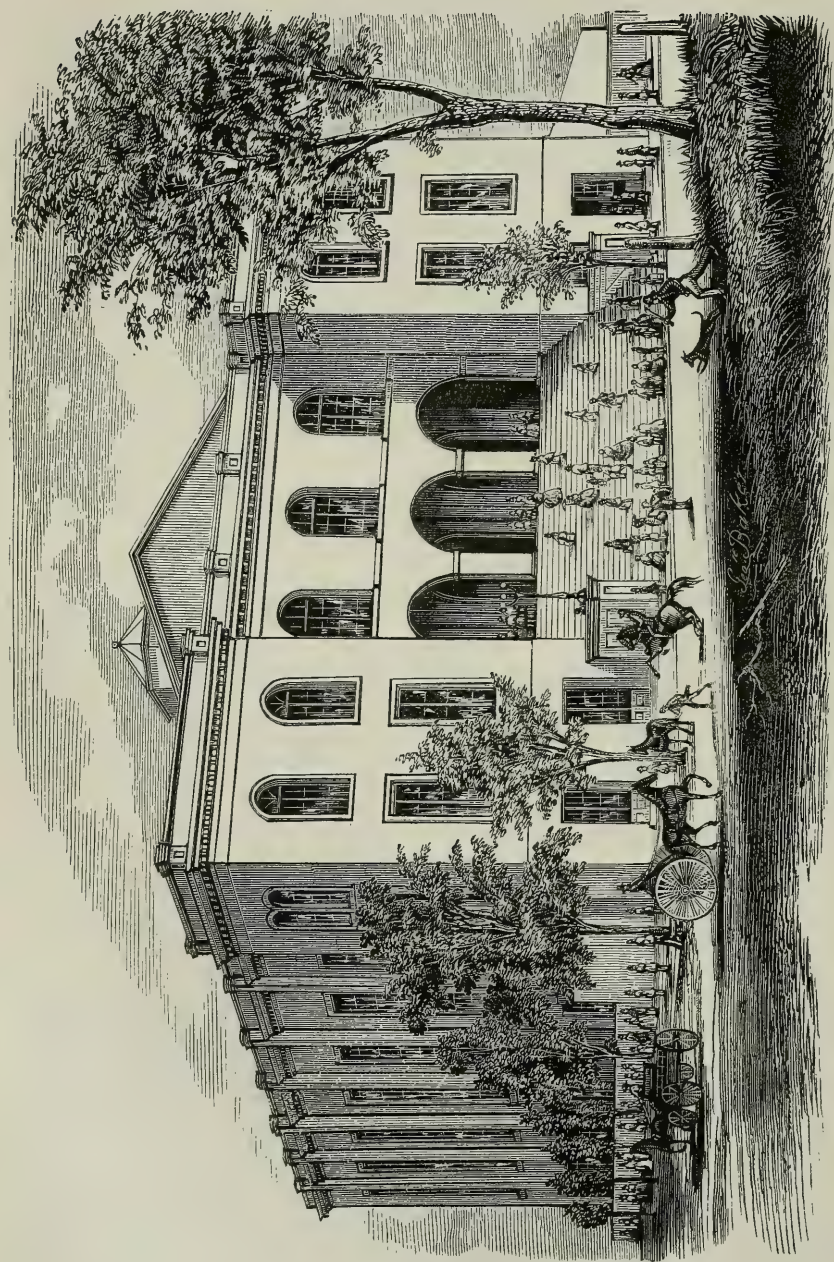
By THOS. M. LOGAN, M. D.

JULY, 1859.	7h. A. M.	2h. P. M.	9h. P. M.	MONTH.	AVERAGE OF SEVEN YRS.
Barometer, Maxima	30.066	30.040	30.014	30.066 inches.	0.000 inch.
“ Minima	29.791	29.753	29.747	29.747 “	+ 0.003 “
“ Mean	29.944	29.914	29.892	29.917 “	0.000 “
Thermometer, Maxima	75.00	87.00	80.00	87.00 deg.	- 6.56 deg.
“ Minima	60.00	68.00	62.00	60.00 “	+ 0.62 “
“ Mean	65.16	74.06	68.00	69.07 “	- 2.54 “
Force of Vapor, Maxima .....	.537	.677	.599	.677 inches.	+ .064 inch.
“ Minima .....	.338	.443	.383	.338 “	+ .015 “
“ Mean .....	.429	.516	.462	.469 “	+ .018 “
Relative Humidity, Maxima	77.00	75.00	77.00	77.00 per ct.	+ 4.92 p. ct.
“ Minima	57.00	36.00	58.00	36.00 “	+ 5.04 “
“ Mean	69.17	62.29	68.58	66.95 “	+ 5.43 “
Number of Clear Days	19	24	25	22 2-3 days.	- 1 1-3 days.
Number of Cloudy and Foggy Days.	12	7	6	8 1-3 “	+ 1 1-3 “
Number of Rainy Days .....	.....	.....	.....	1	+ 1-3 “
Quantity of Clouds	0.9	0.5	0.6	0.7	- 0.6
Quantity of Rain and Fog .....	.....	.....	.....	0.030	+ 0.022 inch.
1st Days and 2d, Force of N. Wind..	0 0.0	3 1.7	0 0.0	1 0.6	- 1-3 -0.4
“ “ N. E. Wind.	0 0.0	0 0.0	0 0.0	0 0.0	- 1-3 -0.3
“ “ E. Wind.	0 0.0	1 2.0	0 0.0	1-3 0.7	0 -0.1
“ “ S. E. Wind..	7 2.1	1 2.0	5 2.4	4 1-3 2.2	+ 2 1-3 + 0.3
“ “ S. Wind.	18 2.5	15 2.8	21 2.2	18 2.5	+ 5 1-3 + 0.3
“ “ S. W. Wind.	4 2.2	5 2.6	3 2.3	4 2.3	- 1 2-3 -0.4
“ “ W. Wind...	2 2.0	5 2.7	2 3.0	3 2.6	0 + 0.9
“ “ N. W. Wind.	0 0.0	1 2.0	0 0.0	1-3 0.7	- 2 2-3 -0.2

Thermometrograph.

	DEG.		DEG.
Highest Reading by day on the 5h and 6th.....	92.00	Mean of all Highest Readings by day	77.42
Lowest Reading by night on the 24th.....	51.00	Mean of all lowest readings by night.....	56.84
Range of Temperature during month.....	41.00	Mean daily range of Temperature during mo. 20.58	

REMARKS.—The persistence of the strong southerly winds enumerated in our table has subjected us more or less during the greater part of the month to the peculiar cold summer climate of the Pacific coast; consequently the temperature has ruled far below the average—the minimum at one time reading as low as 51° degrees, and often ranging from this figure to 55° degrees—as cold as is frequently experienced during the winter. The solution of this great depression of temperature is to be found in a deep sea current of great magnitude and volume from the Polar regions, which appears only by the lifting of its waters on approaching the coast. This great mass of cold waters, and its attendant cold surface atmosphere, develops a strong sea-wind towards our heated and rarified valleys and plains, which, commencing at San Francisco before meridian, does not produce its maximum effect here at Sacramento, until late in the afternoon. The contrasts which induce these violent sea-winds exist only in the summer months, as at other seasons the ocean is warmer than the land, and whatever the degree of aridity, the sudden and extreme rarefactions do not occur in the interior. According to Maury's charts, the refrigerating current appears to originate westward of Alaska, and to pass nearly due south toward the continent in the latitude of Monterey—hence the otherwise inexplicable fact that the northern districts of the Pacific coast should be warmer than at San Francisco. It is supposed also, that there are warm waters flowing over these cold deep sea currents from the great warm currents of the Asiatic coast, and producing the general effect on the north Pacific climate the gulf stream produces on that of Europe. Such as stated by Blodgett, appears to be clearly the case in winter, when these movements outrank those from the Polar seas, and give high temperatures for the whole mass of the Pacific, even where the cold waters are most marked in summer.



AGRICULTURAL PAVILION, SACRAMENTO.

THE CALIFORNIA CULTURIST.

OCTOBER, 1859.

GRAPE-GROWING AND WINE-MAKING IN CALIFORNIA.

[CONTINUED FROM PAGE 109.]

TREATMENT OF WINES.—When the white wine is thoroughly fermented in the barrel, and become clear, it has to be drawn into another clean and, previous to filling it, sulphurated barrel; of course, white wine is put in a barrel which contained before white wine, or was charred recently. Keep the barrels always well filled. At least every fortnight (better once a week) have them cleaned at the bung hole, of the so-called wine-flower, and filled up with the same kind of wine, or even with better, but never with inferior stuff. In the first months it will take more wine to fill the barrels than towards the end of the year.

If you have a barrel (as we call) on the faucet, from which wine is drawn from time to time, or daily, when such a barrel becomes a quarter or more vacant, put a small sulphur brand in the same, first to prevent your wine being partly transmuted into vinegar; and second, that said empty place in your barrel shall not become moldy, and spoil the succeeding wine, or have to be unheaded, and charred anew.

MAKING CALIFORNIA TOKAY.—This noble wine, which I have made in California with good success, is produced as follows:

Select your best and ripest grapes, place them upon straw mats, or cloths, under some shady place—let them be there for some four or five weeks—when they are well shriveled, or half dry, you pick out every rotten berry; then put about one hundred pounds in a bag, made from common coffee-bag stuff; hang the bag up, and place some vessel under it, to collect the droppings by its own weight, often turning said grapes in the bag with the hand; when it stops dropping, empty the bag in the

crushing machine, crush the grapes, and press the juice out of them; give both kinds separate barrels to ferment in, and designate the same with number one and number two, viz: the pressed juice will give the second quality of tokay, and the other first quality. Observe in its treatment the rules above given, and you will have an excellent tokay-like wine, but it will require from three to four years before it is fit for market.

MAKING CHAMPAGNE.—For this quality of wine it seems the Sonoma Valley is peculiarly well adapted, as our white wine, even if not manufactured into champagne, possesses a taste similar to the champagnes that have stood some time in a tumbler, or open bottle, and it makes an excellent article, though combined with a great deal of labor.

1st. The grapes destined for champagne must be over ripe, sticking to the fingers, as above mentioned; they must be gathered on a frosty or very cold morning, early—if possible, before the sun rises—put in a sack of strong linen, and by twisting it the best juice is pressed from the grapes, leaving the balance for common wine; fill with this still cold juice your clean, well sulphurated barrel, half full only; put a long bung into it, strongly guarded with such a filling that may be easily removed without disturbing the fluid in the barrel when you extract the bung; secure, also, the head-ings of the barrel, that the gaseous matters of the fermentation shall not force them out, and leave it in this state, undisturbed, until February or March; then carefully open the bung, that the fluid shall not stir up the sediments; put in a syphon, but mind that said syphon shall not reach as low as the settlings, and draw the clear fluid in a clean barrel, with a stop-cock, and from there into the bottles, each bottle to receive first one spoonful of powdered candy-sugar and a spoonful of the best and purest spirits-of-wine; cork the bottles with a corking machine, purposely made for it; tie the cork down with a strong hemp twine, then lay your bottles on their sides, so that the cork is always kept in the fluid; the bottles must be for several months, from time to time, handled, to regulate the fermentation; if too slow, they must be put in a warmer place; if too strong, in a cooler one; then, if not well regulated thus, the bottles will burst by hundreds; and, with the utmost care, about five per cent. of them is lost. The bottles must, in this way, be handled twice every week, and gradually raised on the bottom, so that they become more and more perpendicularly standing on their neck, so that the sediment will settle on the cork, and leave the balance of the wine perfectly clear, which the practical eye of the champagne-maker will soon discover; then the bottle is taken, by one well trained for this task, in his left hand, carefully, not to disturb the wine, while his companion cuts the twine, and taking hold with his right on the cork, he lets the same sidewise slide out, to leave, for a moment only, a small aperture, of which about a teaspoonful can escape into a basin, over which he holds the inclined bottle, and immediately presses the cork back to its former position, and holds it there fast until his partner ties it with a strong hemp twine, which, lastly, is yet strengthened with a copper wire. By this operation the settlings on the cork are ejected, with great force, in a moment, and

leave the wine entirely crystal-like. That, for this operation, a well practiced hand is needed, every one will perceive. I would, therefore, not recommend the attempt to make champagne for market, as this is a trade by itself, and in large wine establishments, where they make the champagne, every man has his own duty or office to perform; one fills, another corks them, another lets the settlings blow out, etc. But the above is only given that amateurs may make, for their own use, some bottles of it.

TO MAKE PORT WINE.—To make good and superior port wine, take good ripened black grapes, dry them in the sun almost to raisins; when so dried, pick the berries from the stems, crush them, and put them in the fermenting tub. If your grapes are not very sweet, put fifteen pounds of New Orleans sugar to each sixty gallons of said mass, and add to it thirty gallons of one or two years old red wine and two gallons of pure spirits-of-wine; then let the mass slowly ferment. When fermented and clear in the tub, draw it off in barrels, but fill the barrels only two-thirds full; take after this one-third of the liquor, put it in a clean boiler, bring it to a boiling heat, but let it boil up only once; take it from the fire, fill your already two-thirds full barrels within six inches, with the same, and cover the bung-hole with leaves or clean rags; the mass will thus ferment again. In the month of May you may draw the wine in a clean barrel. This will make in a couple of years an elegant port wine.

This treatise being written for the agricultural report, I cannot take too much space in enumerating the making of the various other wines. I will therefore leave that to a more extended work which I intend to publish soon.

MAKING BRANDY.—It was described above, in mentioning the making of the second and third quality of wine, how to extract from the stems and bushes the spirituous parts left in them, with tepid warm water. Take now that so extracted fluid, put the same in your copper still, and distill it over in the same manner as whisky. This first product is then put in a tub with one-fourth pound fresh burned charcoal to the gallon, in a pulverized state, and therein well stirred up for half an hour, and with it again fill your apparatus, and distill it over by a slow fire. If the heat is too strong, you would not only lose on spirit, but your brandy would get weak. In order to make a first-rate article it requires a third distillation. Brandy thus prepared will be superior to most of the imported ones from France, as these are, with very few exceptions, all mixed in France with alcohol, and those which are not, cannot be had here short of twenty dollars a gallon, as these brands are engaged for six dollars and eight dollars there, five and even ten years ahead, by the nobility and rich merchants in Europe. France imports from America, Germany, Hungary, etc., millions of gallons of alcohol for the very purpose of mixing the same with brandy. The product of its vines is constantly decreasing on account of their exhausted soil and their unhealthy condition; while, on the contrary, the demand for brandy is increasing, to supply which they take refuge in the alcohol. This is the case also with the greater part of their claret, which is extracted from the stems and husks

with water many a time, to give it a wine taste ; said watery extracts are then mixed with alcohol, sugar, cream-tartar, colored properly, and sent to the United States, to be drank here with great relish as French claret—everybody believing them genuine articles, especially when they buy or have them bought out of the United States Bonded Warehouse.

TO MAKE BRANDY OLD.—There are several secrets which are imparted only for very high prices by some celebrated manufacturers in France, and even for so high prices as one thousand ducats. They will only communicate their secret of making superior brandy to such persons as are highly recommended by influential men. But to improve the brandy and give it the so-called mildness, they commonly take it to a warehouse, which is several stories high (from forty to sixty feet) and let it run down from the very top to the bottom, in fine streams as thin as twine, through the trap-door passage, and repeat it several times, thus said brandy will materially gain in mildness, but, of course, will lose in strength. Another method is, to heat pebble-stones and throw them into the brandy barrels, and repeat this monthly, and the brandy will thus improve more rapidly in a year than otherwise in three. Some unscrupulous men even use prussic acid, in a diluted state, to give their brandies the flavor of old brandy, and thus poison the same to the great injury of health and life.

The mode to prepare the very finest brandy, in an entirely innocuous way, the writer of this cannot disclose, having been compelled by his teacher, about twenty years ago, to pledge his word of honor for keeping the secret.

Having said—not all I could—but all that might be properly brought within the compass of a short treatise, concerning the cultivation of vineyards and the making of wines and brandy, I deem it necessary to make a few remarks in regard to the quality of our wines. They are, at present, all made from the native California grapes, as our foreign varieties were but few in number to make into wine, especially when some varieties brought from thirty-seven and a half cents up to a dollar, and even a dollar and a half per pound. It is nevertheless certain that grapes of different kinds, off the same soil, well assorted, will make a far superior wine. To illustrate this more to every man's mind, I will compare the wine-making with the cooking of a vegetable soup. You can make from turnips a vegetable soup, but it will be a poor one ; but add to it also potatoes, carrots, onions, cabbages, etc., and you will have a fine soup, delicately flavored. So it will be with your wine ; one kind of grapes has but one eminent quality in taste or aroma, but put a judicious assortment of various flavored grapes in your crushing machine, and the different aromas will be blended together and will make a far superior wine to that manufactured from a single sort, however good that one kind may be.

No doubt some of my readers wish to know what sorts would be the best to plant. This is a difficult matter to be decided at present, as it requires some years to determine which quality of the imported species will be the best for this purpose ; a great deal, besides, depends on locality and soil. In one soil or locality one kind will thrive and be superior to a kind that will, in another locality or soil, far excel the

former. So much I can say from my own experience, for California : that, with few exceptions, my imported vines from Hungary and other parts of Europe, have shown a peculiar preference for our soil or climate, or both together ; bearing sooner and larger bunches and berries, than in their native country. Whether this will continue, it is to be proved by the future. Repeated trials have been made by planting the species from the celebrated localities, as Tokay, Johannisberg, etc., in lower parts of Hungary—what are called the lower flat lands or plains—consisting of very rich, light, sandy soils ; they bore fine flavored grapes for a few years, but soon lost said quality and made as poor wines as the native vines ; and so the reverse, vines raised in these low lands, when transplanted to those celebrated spots, greatly improved and made good wine. I would recommend all planters to get as many varieties as they can test, and compare their qualities on their own soil, and keep on cultivating those which thrive, bear the most, and make the best wine. This is the surest mode of getting satisfactory results.

COST OF PLANTING A VINEYARD.—This, of course, will vary with the price of labor, locality, and soil ; but to give an idea to persons who have no practical knowledge, I will give a correct account of the planting of a vineyard of one hundred acres. This was actually expended on the same, in labor and money, having kept a strict account of everything. The soil is red clay, intermixed with partly decayed, and partly in the process of decaying, volcanic rocks, the soil having been previously cultivated for grains. These one hundred acres were planted in January, 1858.

Three teams, three men, nine horses, twenty days with deep tiller ;	
three teams, three men, six horses, twenty days with the shovel-	
plow ; six men lining out and staking, twenty-one days ; twelve	
men digging holes, twenty-one days ; six men planting, twenty-three	
days ; one hundred and twenty days' work ; wages, \$35 per month,	
board, \$15=50 ; per day, \$1 93.....	\$231 60
Current prices of horse-hire, fifty cents per day for fifteen horses, \$7 50 ;	
twenty days' use	150 00
Horse-feed, grain and hay, twenty five cents per horse.....	75 00
Blacksmith's bill, wear and tear of harness, etc.....	30 00
Eighteen men laying out and digging holes, wages, \$30 ; board, \$15 ;	
two hundred and seventy-eight days' work.....	653 94
Six men planting, twenty-three days' work ; wages, \$30 ; board, \$15 ;	
one hundred and thirty-eight days' work	238 74
There were thirty-two days' work spent in digging the rooted vines	
in the nursery, hauling them and trimming, etc.....	55 36
The making of cuttings and planting them in 1857, in the nursery for	
rooting, their cultivation during summer, did bring these rooted vines	
to four and a half cents a piece, or 68,000 vines at \$2 50 a thousand.	170 00
Total cost of planting said one hundred acres	\$1,604 64

First summer's cultivation, two hundred and sixty days manual labor, \$50 per month, with board.....	\$500 00	
Horse-hire, and their feed for five months.....	205 00	
Blacksmith's bill, wear and tear of harness, etc.....	15 00	
Pruning, first year, in January.....	25 00	
		<hr/>
Total summer work and fall pruning.....		745 00
SECOND YEAR'S EXPENDITURE.—Replanting those which died out from the years planting and sprouting.....		
	\$60 00	
Summer cultivation, as last year, with fall pruning	745 00	
		<hr/>
Second year's total expenses.....		805 00
THIRD YEAR'S EXPENDITURE.—Sprouting and additional expense for pruning, as this goes slower this year.....		
	\$120 00	
Summer cultivation, as above.....	745 00	
		<hr/>
Third year's total expense.....		865 00
		<hr/>
Total expense up to bearing.....		\$4,019 64

THE YIELD OF THE VINEYARDS.—This depends, in a great measure, on the soil, the cultivation and care bestowed upon your vines. I will here give the product of vines planted in my vineyard.

Lot number five contains one thousand, seven hundred and ninety-three vines, planted from cuttings, permanently, in February, 1854; bore, on an average, to the vine, in 1857, nine and a half pounds of good grapes; in 1848, on an average, forty pounds of grapes. The soil is very rich, and there was some time ago an Indian village there.

Lot number two contains one thousand, two hundred and thirty-two vines, planted in 1854, with one year's rooted vines. In this lot the grapes have not been weighed, but an account was kept of the wine made from them. It yielded one thousand, two hundred and sixty-five gallons of the first quality of wine in 1857, and grapes were sold from this lot to the amount of one hundred and five dollars, besides what were used for the house. In 1858, this lot averaged three gallons of wine to the vine. The soil is red clay, of volcanic origin, with decayed rocks.

Lot number one contains one thousand, three hundred and twelve vines, twenty-four years old. Last year the account of the weight of the grapes was lost by accident. No correct average can be given, but this year the average product was eighty pounds to the vine.

In the valley of Sonoma, grapes well cultivated, in good soil, will give one gallon first quality wine from twelve pounds, one-eighth gallon of second quality, one-sixteenth gallon of fourth proof good brandy, besides some vinegar.

The wine can be sold young, if made into first quality white wine, to San Francisco merchants, for seventy-five cents, and second quality red wine for fifty cents per gallon, and new brandy at two dollars and fifty cents. The reader will see by the above that vineyards will pay at the present rate from one to two thousand dollars per acre, according to soil and age of the vines.

PRESERVING GRAPES.—The best mode of preserving grapes is, in my opinion, the following: Build from boards a fruit house, having between them one-eighth part of an inch space, instead of joining the boards close together, in order that the air may freely circulate; then put slats up to the top; gather your grapes before they get wet from the rains, which makes them rot and burst easy; tie two bunches at the ends of a piece of twine, a short distance apart, and hang your bunches thus tied up on the slats; mind that the bunches do not touch each other, and your grapes will keep till summer. I have now—February twentieth—as fine and fresh sound grapes as if gathered a week ago.

Being limited in space and time, I must conclude this already too long treatise, but in concluding, I would respectfully suggest, that if the Federal Government would give instructions to the different United States Consuls, living in all parts of the civilized world, and especially to those who live in celebrated wine countries, to collect annually a certain amount of vine-cuttings from all varieties, good and bad, and send them to the Patent Office, the Commissioner of Patents might direct the planting of said cuttings in a congenial soil and climate, and when fairly rooted and multiplied, have them distributed in such parts of the Union wherein vines thrive. The expenditure of the government would be a trifle in comparison with the immense benefit our citizens would derive from it, and it would save, in a few years, millions of dollars that are now sent to foreign countries for wine, brandy and raisins. California, with such aid, would not only produce as noble a wine as any other country on the face of the globe, but it would export more dollars' worth of wine, brandy and raisins, than it now does of gold.

A. HARASZTHY.

BUENA VISTA, SONOMA COUNTY, February 21st, 1858.

CALIFORNIA HORTICULTURAL SOCIETY'S EXHIBITION.

THE third annual exhibition of the California horticultural society was opened at Musical Hall, in the city of San Francisco, on the evening of the sixth inst., and closed on Saturday, the 10th, at 11 P. M.

At the opening of the exhibition, on Tuesday evening, the President of the society, J. W. Osborn, Esq., of Napa, made the following introductory remarks:

LADIES AND GENTLEMEN:—On welcoming you to this, our third annual exhibition, it is with honest pride that our efforts to grow all varieties of fruits of the temperate zone, and many of these of the tropics, has met with such success in this our

California. No longer a doubt—not a question, but positive, unqualified success in the culture of both late and early fruits.

We show you, side by side, the fruit of the present season and the past. None now can doubt the capability of our soil and climate to produce, with or without irrigation, the very finest varieties of fruit.

Our society is gaining in usefulness and in numbers; already we have an extended reliable fruit list which will be revised and corrected by this year's experience. By our light, those now planting may ensure success; to relate our experience, and to spread before you the net results of our labor and our skill—the evidences that we have improved, and are still improving, we hope, to a point when no other fair can exhibit, or no other market afford such an abundance of choice and highly cultivated horticultural products.

We thank you for meeting with us; we invite you to our convention, to be holden to-morrow and the following days, and will, with your support, each year bring forward like convincing proof that Californians and their homes are not much longer to be deprived of Eden's comforts, nor are they homes which we intend to leave. I will now introduce to the audience the Secretary of our society, Mr. Wadsworth, who will deliver the

Annual Address.

MR. PRESIDENT AND MEMBERS OF THE CALIFORNIA HORTICULTURAL SOCIETY, LADIES AND GENTLEMEN:—The subject of horticulture, or the culture of the garden with its fruits and its flowers, has ever been, to a greater or less extent, the theme of the poet, the philosopher, the historian, the sage, the politician and political economist, from the earliest period of man's existance to the present.

It was an employment instituted by Deity, and introduced into the garden of Eden, undoubtedly because He deemed it the most fitting that could be devised for man, as subserving at least his more immediate paradisiacal wants and happiness.

Agriculture in its broadest sense, has ever been deemed an ennobling pursuit, worthy the special favor and countenance of kings, and of the rulers of the peoples of all countries. If agriculture is that high and honorable pursuit, entitling its votaries to the world's praises, what may we not say of horticulture? which is but the refinement of all there is good in agriculture, without any of its evils; for agriculture as practiced in the Atlantic states, and in this state—and differing widely from European agriculture—has its evils; horticulture, few or none.

Horticulture, technically speaking, differs materially from agriculture in this: that whilst the former is adapted to the production in the highest degree of perfection and in the greatest abundance, all the multiplied products of the garden, the orchard and the vineyard, including, not only the finer fruits and flowers, but all the more succulent and perishable—though none the less desirable—vegetables; agriculture is that branch of the soil's economy, occupancy and culture, that supplies the world abroad as well as at home, with the products of the dairy, the flesh food and clothing of our

people, and annually fills to overflowing the graneries of our country with the more substantial and indispensable products of the grain fields.

But it may be asked, in what consists the evil of an American agriculture, as differing from European, that is not equally a concomitant of our horticulture? We answer, horticulture as practiced amongst us, or upon the Atlantic side, improves the soil; the suburban gardens of every city in the Union, though devoted to the constant production and reproduction of fruits and flowers and vegetables, are as abounding in every element constituting a fertile horticultural soil now, as they were fifty years ago.

But agriculture, in the Atlantic states, has impoverished the soil, and it is already doing the same for California. In this, then, we find the evil of an American agriculture, that our soils are annually yielding less of the more important cereals, whilst European soils, with a European culture, are even more productive now than they were a century ago.

But it is not our purpose here to discuss the principles or the practices of agriculture, as adapted to the great wants of civilization, or its influence as effecting the pecuniary or commercial interests or prosperity of the states of the Pacific coast; we shall leave this to be discussed by agriculturists, soon to assemble from all parts of the state, at Sacramento, for this very purpose, or it ought to be made a purpose, a prominent, distinctive feature of the approaching state fair.

But of the principles and practices of horticulture, as applicable to California, we claim to have a right to speak, to endorse or to condemn, unless the display of fruits and flowers, now on exhibition here, does not disarm of argument every opponent to our modes of culture, by its gorgeous richness, beauty and perfection. And, though these fruits and flowers may excel in every attribute of perfection the best the world has ever known before, yet no one except he who believes he knows more than all his compeers, will deny that there is yet vast room for improvement, and that that improvement must be based upon our own experience and practice, rather than upon the dogmas of learned horticultural book writers of other countries.

If we can obtain all the information necessary to a practical and perfect horticulture in a country in which even its climate is as yet an anomaly, a mystery, by studying the works of even our best authors, why all that would be really necessary for the man desirous of turning his attention to the culture of fruits, trees, plants and flowers in California, would be to purchase a few books, and from them learn all that can be learned of horticulture.

No, gentlemen, we cannot learn a system of horticulture, adapted to the soil and climate of California, from any printed book extant. If we can, why this society, or any other for the promotion of our horticulture? Is it for the purpose merely of annually gathering together a few fine specimens of fruits, and exhibiting them here as the mountebank does his shows, for the gain of a few paltry dollars? Rather let it be said that it is for the improvement of our horticulture, by assembling together the practical working horticultural producers, and by a comparison of products and the imparting of the knowledge gained by the experience of the more successful,

stimulating others to renewed efforts at improvement, by adopting the practices of those who, discarding old theories and systems, are leading the way in a new and successful horticulture, adapted to our own peculiar condition of soils, climates and circumstances.

Who among you, what horticulturist here present, we ask, ever thought of writing home to his friends in the Atlantic states or England, for information as to the best mode of cultivating a garden here, in a country in which the sun shines perpetually by day, and no rain falls—or next to none—during the whole six months of summer?

It is for us to learn from our own experience, and not for them to tell us; and even their books can only tell us what they know, and they know nothing of a California climate, soil or culture that you have not told them; hence the fallacy of relying upon their experience. And we find it equally true that even our own experiences and practices, the best adapted to one locality, cannot be relied upon for another; hence the varied and conflicting opinions and sentiments in regard to horticultural practices even among Californians.

Thus it is that we find horticulturists entertaining directly opposite opinions upon the same subject; and yet both may be right. We will instance the practice of irrigation. One possesses soil that a ten years' experience has clearly demonstrated is better without irrigation than with; but this does not make it true that irrigation is undesirable, because we are at once met by some of the best and most successful horticulturists and fruit growers in the state, with the declaration that irrigation is the basis of their success; that without it, they might as well abandon their now successful and profitable pursuits. But because we have no experience with another's practice, which has grown out of circumstances that have not surrounded us, we should not always condemn; for though we would dispense with irrigation everywhere if we could, and believe it can be in very many localities where it has been deemed necessary; yet after all, irrigation will make beautiful thousands of acres of our valley lands; irrigation will yet plant and sustain forests of orchard trees, on, around and among our foot-hills, where trees were never grown before; and irrigation will yet transfer acres and acres of vineyards from the grosser alluviums of our valleys, and hang them in luxuriance and richer juices upon the mountains' sides.

Nor is it, gentlemen, that you are here assembled once a year, to discuss mere modes of culture and management; but it should be made a point to determine what particular fruits are adapted to successful growth in different localities. It is a matter of the first importance to the future beginner in horticulture, in California, to know where, in what locality, he can rely upon an annual yield of the particular varieties of fruits, or peculiar products he may choose to cultivate. Had the early pomologists of Oakland and Alameda known just what varieties of fruits would have best succeeded in the climates peculiar to those localities, fortunes ample and abundant would ere this have crowned the labors of many that to this day have been only experimentists.

And what is true of one locality will apply to a large part of California, for

hardly any two places have the same climate; and should their climates happen to be similar, their soils are almost sure to differ. But it is no disparagement to the present, and much less to the future of our horticulture, that we have these varied circumstances of soils and climates; they secure to us the fruits of the temperate zones, mingled with those of the tropics. Here, in this hall, as the products of California, we find the orange, the lemon, the fig and the pomegranate, that have grown almost side by side with the luscious peach, the more hardy apple and the pear, and as your tables show, all truly excellent of their kind; and these again interspersed with flowers so beautiful in form and brilliant in their coloring, and yet so chaste and pure, even nature in them would here have excelled herself, but for the presence of your wives and daughters.

But why is it that we must meet here such competitors for beauty and excellence? "Because," say they, "we have a right to interfere with the interests of horticulture, a right established upon early precedent." Ladies, there is something of truth in this, we admit; but you will please allow me to say something of the consequences that grew out of that interference. We have before remarked that horticulture was instituted by Deity, and introduced into the garden of Eden; so it was, and undoubtedly would have been man's first employment, but for the fact that there was found to be a woman around; and the two, getting their heads together—as they always will—to the neglect of Eden's horticulture, conceived the idea and necessity of first making a sewing machine; and they did it. Doubtless they had a motive, the propriety of which at this late day we have no right to call in question; though had it not been for this, horticulture might have taken rank as man's first employment.

But whether first or second, from that day of early industry and fig-leaf experiment, down, down to the time when "a body met a body, coming through the rye," woman has been everywhere, alike associated with agriculture, horticulture and homoculture, and probably always will be. Indeed, but for her, the beautiful in horticulture would hardly be known amongst us; what cares man for flowers? he may think he loves them, and he does cultivate them now; but did he before woman came amongst us? Or were not his efforts in horticulture almost exclusively confined to the production of onions, cabbages and potatoes?

It seems to be the peculiar province of woman in horticulture, to bow at the shrine of Flora; with her own hand or by her influence, to twine the clinging tendril of the creeper, the rose and the honeysuckle around our portals, making beautiful our homes; whilst man goes forth, spreading broad and wide the golden mantle of Ceres over our plains and valleys, or in honor of Pomona, wraps the gorgeous drapery of the vineyard around the shoulders of the mountains.

Next to an early and perfect knowledge of the effects of climate and the adaptation of fruits to localities, is the great question—in the minds of some—of a market for our surplus products. The fear of an over-production of fruits, by which the producer will be the loser or receive but a meager return for his labor, time and care, seems to have had the effect of greatly retarding the otherwise large annual increase

of production. The fact that during a few days of the common season for the ripening of some of our more easily produced fruits, so much of an inferior quality has at times been forced upon the market as to lower the value of better fruit, below a paying point, has induced a belief in many that with the immense numbers of nursery trees annually sold and added to the producing side of the account, all fruits will soon become so plentiful as hardly to be worth the care and trouble bestowed upon their culture.

There must be some error here. Good fruit has ever, in all countries, maintained a paying value; so true is this, that we see at this moment all the finer fruits bringing higher prices in the markets of the Atlantic cities, than ever before, and with a foreign demand for the same fruits actually increasing. The fact that even though we had not the increase of population that we annually can claim, and only our present population to supply, that our horticulturists would still be the men amongst us who would gather in wealth from the soil, should be a sufficient stimulus for a greatly increased breadth of orchard planting.

But suppose California should produce more fruit than can possibly be consumed at home, and it should be found necessary to export the surplus; is there any fear that such export will injure us? Has it come so suddenly to this, that because California can export a large surplus of agricultural and horticultural products, that her corn, her fruits, her wines and her wool, are flooding the markets of the world, that she must necessarily be verging upon bankruptcy? Political economists seldom say this of any country; but they do say, and it has been the experience of the world, that where a country is found abounding in horticultural products and able to export a large surplus of all the finer fruits, the people of that country must necessarily be well fed; which constitutes one of the first elements of happiness with all the animal or animate creations with which we have any thing to do.

Without an assignable limit therefore to the amount of valuable exports in the line of horticultural products, with soils and climates highly favorable for their production, it only requires the investigation and experience of practical men to know what varieties of fruits are the best adapted for export, both in a green and dried state, and then to introduce them to localities favorable to their growth, and we make California the greatest fruit producing and exporting country, of equal extent, in the world. Much has already been achieved by individual members of your society, towards introducing all the more valuable fruits and products, and yet much remains to be done; and we would suggest whether it is not desirable that, as a society, measures be taken further to advance the interests of the horticulture of the state, by some more direct and combined effort and action to secure it.

Why, gentlemen—allowing me a moment's digression—it would be doing more towards making an Atlantic and Pacific Railroad a necessity, than all the arguments and speeches that ever have been or will be made for ten years to come. The fame of California horticultural products is world-wide. Let her but pour them forth as she does her gold, only half equal to her capacity, and her surplus of agricultural horticultural, gold and other mineral products, would in ten years build the railroad

There are yet other matters connected with the progress of our horticulture, that may well claim your attention apart from mere adaptation of varieties to localities, soils or climates, or the production of fruits for the purposes of home supply or export. We allude more particularly here to the drawbacks incident to culture arising from the depredations of vermin, as the gopher, squirrel and mole, with birds and insects. It should be the careful study of every horticulturist to add his share of valuable information as regards the best mode for the extermination of these pests. We ought not perhaps to consider birds as our enemies, or as injurious on the whole to the interests of horticulture, and I am aware that it is quite common to expatiate upon the great benefits we derive from the birds in the destruction of countless insects, but it requires more of love for the little rascally robbers and intruders—for they are not the songsters—than we possess, just because they are birds, stoically to permit them to appropriate to destruction our finest fruits, in quantity far beyond their actual wants for food, without an effort to destroy them. We therefore place them in the lists, as being at least closely allied to horticultural pests.

The curculio, that greatest of all enemies to the smooth skinned stone fruits in the Atlantic States, is at present wholly unknown amongst us, so that the plum, apricot and nectarine are produced as perfect and as fair as the peach or apple; but in very many localities a species of borer is doing serious injury to a few varieties of fruit trees, and until some more certain method is devised for its extermination, together with gophers and squirrels, than is yet known, horticulturists should not relax their efforts in that direction. And equally deserving your attention are the diseases of trees and plants, incident to soils, climatic influences, or a lack of constitutional vigor occasioned by improper culture or other cause. Among the more prominent of these is the disease known as the peach leaf curl, and it should be made the careful study of pomologists to investigate its causes and discover a preventive; for until a preventive or remedy is known, but few will be inclined to indorse any opinion relative to its cause.

We have thus touched upon some of the more prominent features connected with the practice of your vocation as horticulturists. As a society, you have reason to be pleased at the progress you have made. This is your third annual exhibition; the second was better than the first, and this is an improvement upon both; and though the present has been a season unpropitious, beyond an average for California, for the fullest development of her horticultural products, yet we believe the display of fruits here presented, taking their size, beauty, fairness or freedom from imperfection, and good qualities in every sense, into account, could a comparison be made, would be found without its equal in any clime or country.

This one fact alone, that as a society you are able to beat the world in horticultural products, ought of itself to be a sufficient encouragement for your continued, combined effort. You have reason to be proud of your success; with no experience in California culture, or knowledge of the constituents of her soil or effects of climate, you have mastered, in a great degree, many of the previously unknown conditions of both; and if you have not made them entirely subservient to your purposes, you

have discovered at least, some of their capabilities and turned them to good account, as this exhibition most clearly proves. And yet, with all this done, you have much more to accomplish. There is a wide field before you, such is the extent of your territory, and so varied in its conditions, rising from the frostless tidal wave, upward and upward to heights from which nature, with chilled and frosted fingers, has never yet been able wholly to unwrap the pale mantle that old father Time, in the days of his early gallantry, threw around them; all, with their varied altitudes and exposures, await your continued and persevering efforts in ascertaining their fullest capabilities for horticultural purposes; and it should be your pride, that you possess a field, so wide and fertile for propitious occupancy.

“Land of the West—beneath the Heaven,
There’s not a fairer, lov’lier clime;
Nor one to which was ever given
A destiny more high, sublime.

Go hence, then, once more to your noble work, nor let your pride nor your ambition flag; let your valleys lift their vineyards to the foothills, and let the hills pass them on and upward to the mountains, until their very gorges and cañons shall burst forth with new wine; and this, the evening coast of our country, the land of gold, sunshine and flowers, be recognized and acknowledged, as the Italy of America, the vineyard of the continent, the floral and pomological garden of the world.

Descriptive Report.

Our own time being completely taken up in official duties pertaining to the exhibition, in connection with the fruit-growers’ convention, we have availed ourselves of extracts from the very full and correct report of the same, in the *Daily Alta California*—a paper always devoted to the furtherance of every interest and enterprise connected with the horticulture of the Pacific coast.

“The third annual fair of the California horticultural society was opened last evening, at Musical Hall, which, of course, is tastefully and appropriately decorated. Evergreens, garlands and wreathes ornament the walls, and hang in festoons over the numerous tables, interspersed with the national ensign—always a beautiful decoration. At the south end of the hall is a painting representing Pomona and Flora, the goddesses of fruit and flowers, of whose great handiworks the exhibition consists. Tables about four feet wide extend along the walls of the room, with two of equal width placed nearly in the center, extending nearly the whole length of the hall, leaving however, an open space in front of the rostrum, which is occupied by a circular pyramidal stand about twelve feet across, rising by steps or shelves from the circumference to the center, which is covered with flowers and ornamental plants and presents a very beautiful appearance. The display of fruits is truly magnificent and the exhibition of flowers and vegetables tends to make a *tout ensemble* of more than ordinary effect. Our space to-day will not permit a lengthy description of the particular displays made, and we can only speak in a general sense.

Mr. Delmas, of the French garden, San Jose, makes a notable display of grapes and pears, one which would do the heart of any culturist pleasure to gaze at. We regret, however, to note that the San Jose folks have not yet occupied the space allotted to them; which, we suppose, is owing to the election excitement. It seems that the members of the society are not politicians, or they would have selected some other period than election week for their exhibit this year.

Mr. Macondray, from his seat at Brookside, sends a magnificent collection of hot house grapes, apples, pears, etc., and Mr. Lewelling, of San Lorenzo nursery, also makes extensive displays of great variety. Messrs. Fountain and White, of Oakland; Haile & Farwell, of Alameda, and Thompson & Gibb, of Suscol, are also on hand; and Oak Knoll, which has been furnishing us all the season with eatable peaches, makes a show of its capacity in the apple and pear line.

SECOND DAY.—A large addition was made yesterday morning to the articles on exhibition at the horticultural fair. All the tables are now filled, and there are many striking features never collected at any of our previous fairs. Among the articles added yesterday to the collection, are a specimen of the Chinese tea plant, a specimen of the *sequoia gigantea*, the mammoth tree of Murphy's, an India rubber tree, mammoth beet, some magnificent peaches, from Marysville, a small but very elegant collection of potatoes, etc. The variety of fruit is very great.

The general appearance of the hall is very pleasing. The festoons of evergreen on the walls and over the tables, and the abundance of the fruit, fill the eye, and by their diversity keep the attention of the visitor constantly on the alert. The sight is gratified, whilst music adds to the enjoyment of the scene.

Besides the fruits there is a truly splendid collection of rare pot plants, of which the Golden Gate Nursery, W. C. Walker, contributes three hundred and ninety-six pots, two hundred and sixty-four varieties; the United States Nursery, O'Donnell's, three hundred pots, among which will be noticed several orange trees with native fruit, the *Stephanotis florabundis*, and a large variety of evergreen and ornamental shrubs. Among the varieties from the Golden Gate Nursery we notice the India rubber tree, and the *Escallonia Montevidiensis*, a scarce and beautiful specimen of flowering evergreen. Mr. Hutchinson, of Alameda, has a very choice collection of pot plants also. Mr. Sontag contributes a glorious collection of cut roses, embracing some one hundred varieties. The Golden Gate Nursery, and Mr. Hutchinson also, make show of fine collections of cut flowers. The specimens of wines and brandy are not numerous. A. Delmas, of San Jose, exhibited two varieties of red, one of white, and one of "ladies' wine. Gen. Vallejo, of Sonoma, sends two varieties of the vintages of '57 and '58. L. A. Gould, of Santa Clara, a sample of white wine. A. D. Wilson, of Los Angeles, four varieties of wine and one of brandy, of the vintages of '55, '56 and '57. Kohler, Frohling & Bauck, three varieties of wine and three of brandy, including white and peach, of the vintages of '56, '57 and '58.

The fine arts have a notable representation in a collection of thirty-five water color pictures of California fruit, by Mrs. M. B. M. Gridley, of this city, which for fidel-

ity, delicacy of color and finish, we never saw excelled. They are to be perpetuated, we learn in the shape of an album. Miss Gushee exhibits four pastel fruit pieces, and Mrs. Benton has her picture in oil of the great Yo-Semite Falls.

Perhaps the most wonderful article in the fair is the monster red beet, weighing one hundred and fifteen pounds. It beats all. It is two years old, and after having been exhibited last fall, by Mr. John Lewelling, when it weighed forty-two pounds, it was stuck in the ground a second time to produce seed, and in twelve months it has gained one hundred and seventy-five per cent. in weight, without attaining that object. If the owner should pursue the same policy for several years more, and it should grow in the same proportion, it would weigh three hundred and fifteen pounds in September, 1860, eight hundred and fifty-five in 1861, 2,300 in 1862, and so on. It is now about five feet long and nearly two feet through. California *beets* the world.

FRUIT.—The display of fruit is laid out on four tables, although here and there a small collection is placed on one of the wall tables, among the vegetables. Although San Francisco exhibits but two collections, we can point to them with pride, inasmuch as Mr. J. C. White, of Minna street, grew his fine specimens of pears and peaches in his own small garden, with its soil of sand; and Mr. John Center, of the Mission, had to contend against the prevalent wet winds. The features of the fair was the collection of grapes from A. Delmas, of San Jose, who has in his vineyard no less than eighty varieties, and the grapes from Capt. Macondray's hot house, San Mateo. Yesterday the tables were well filled out, and we noticed a preponderance of unirrigated fruit, exhibiting a great difference from last year's fair, and showing by the produce that the irrigation theories are exploded. [Not entirely so. Ed. Cul.] We commence our visit at the south end of the western table and follow the line:

J. C. White, Minna street, San Francisco—three varieties of pears, two of peaches, one of strawberries.

John Lewelling, San Lorenzo Nursery—forty-three varieties of apples, twenty-seven of pears, sixteen of peaches, three of nectarines, eleven of plums, with a Madrone tree in the center of the table ornamented with fruit.

A. W. White, Oakland—thirty-five varieties of apples, sixteen of pears, six of plums, three of nectarines, one of raspberries, two of blackberries, and a variety of preserved fruit.

Daniel Gibb, Suscol—seventy-three varieties of apples, and all choice, twenty-six of peaches, including the blood cling, five of pears, three of quince, seven of apricot and nectarines.

Oak Knoll, Napa, J. W. Osborn—much was to be expected from the President of the society, and the display he made of unirrigated fruit is certainly encouraging. He exhibited fifty-seven varieties of pears, of every choice character, forty of apples, five of grapes, in quantity, they being festooned on the vines across the table, sixteen of peaches, ten of plums, four of nectarines and apricots. Several branches of trees with fruit thereon, also ornament the table; on one is a cluster of thirty three plums and on another thirty pears.

Charles Mock, of Petaluma, sends a curious collection, being four well preserved apples of last year's growth, which compare favorably with their younger specimens.

Capt. Macondray, Brookside, San Mateo county—twelve varieties of grapes, including the Canon Hall Muscat, Black Hamburg, Palestine and Muscat of Alexandria varieties—in all some forty or fifty specimens—thirty of apples and sixty-two of pears, both of which are exceedingly choice.

D. E. Hough, of Oakland, has a collection of berries—six varieties of strawberries, fourteen of raspberries and two of blackberries.

J. D. Woolsey, of Oakland—sixteen varieties of pears, two of raspberries and one of blackberries. Of the pears, the Louise Bonne de Jersey are magnificent.

L. A. Gould, of Santa Clara—fifteen varieties of pears, nine of apples, eleven of grapes, four of plums. The grapes and Bartlett pears are very fine.

S. Thompson, of Suscol—thirty-seven varieties of apples, among which the following are particularly noticeable: Gloria Mundi, Bailey Sweet, Canada Reinett and Rhode Island Greenings; twenty-six of pears, among which are some splendid Bartlett, Duchess D'Angouleme and Steven's Genessee, together with curiosities in the shape of second crop of Bartlett, seven of grapes, ten of plums, four of apricots, one of seedling gooseberries; sample of red and white currant wine, and a collection of preserved fruits; four varieties of currants, twelve of cherries and five of gooseberries.

G. W. Fountain, of Oakland—twenty-four varieties of apples, two of pears and one of plums.

W. H. Lentz, San Francisco—A basket of miscellaneous fruit and a pot of preserved nutmegs from the Sandwich Islands.

J. C. Hutchinson, Alameda—five varieties of choice grapes, one of apple, the "Rib-stone pippin," a famous English variety. He also has a fine collection of rare plants.

Dr. H. Haile, of Alameda—sixteen varieties of apples, thirteen of plums (unrivalled in the fair) one of nectarines, two of apricots, twenty-four varieties of preserved cherries and seventeen of plums, twenty-one varieties of pears—among the latter the Bartlett, Louise Bonne de Jersey and Le Cure, are really magnificent.

A. Delmas, of San Jose—thirty varieties of grapes, white and black, which surpasses, we believe, any similar exhibition.

John Center, Mission Dolores—seven varieties of peaches, six of plums, six of pears and six of apples.

Besides the above, there are several collections received during the day, unmarked by the producer.

THIRD DAY.—The additions to the fruit display to-day were twenty eight varieties of grapes—out-of-door culture—and forty-seven varieties of pears from A. P. Smith, of Sacramento, five varieties of grapes, eight of apples, and four of pears, from Judge Daniels, San Jose, and some samples of *Magnum Bonum* plums, from Jas. R. Lowe and Messrs. Schellenberger, of the latter town.

VEGETABLES.—Although the display of vegetables is not, by any means, large, what is shown is very choice. It consists as follows:

Daniel L. Perkins, of Oakland—fifty varieties of seeds, of California growth, specimens of corn, five varieties; cucumbers, four varieties; Jenny Lind citron, petty pan summer squash, winter and summer crooked-neck squash, tomatoes, marrow squash, Ruta Baga turnips, sugar and blood beet, blood turnip, and six varieties of cabbages.

G. W. Fountain, of Oakland, specimens of the Hubbard squash, Boston marrow, French nutmeg melon, green citron melon, Spanish white melon, Excelsior melon, green and red tomatoes, and a drum-head cabbage, weighing thirty-five pounds.

D. E. Hough, of Oakland, has a notable collection of potatoes—sixteen varieties, eleven varieties of beans, three of cabbages, one of squash, one of turnips, four of corn, one of melon, two of sweet potatoes, besides some bald barley, Nepaul, or India barley, Chinese yam, and chufa or earth almond.

FOURTH DAY.—We notice that Mr. Washburn, of Shell Mound, exhibited a collection of fruit grown at Yankee Jim's, Placer county, which spoke well for mountain orchards. It consisted as follows:

Two varieties of foreign grapes, grown by Dr. Wm. Barstow; three varieties of pears and two of plums, grown by Mr. Moulton, and four varieties of plums, grown by Mr. Whittier.

Mr. O'Donnel, of the United States Nursery, exhibits a very desirable collection of ornamental trees of evergreens, which cannot be excelled. Those who feel interested in the culture of such, should visit his nursery and view the care taken to introduce to our state the rarest and choicest plants in the floral and ornamental line.

Fruit-Growers' Convention.

FIRST DAY.—THURSDAY, Sept. 8th.—The members of the horticultural society assembled to-day in Musical Hall, as a fruit-growers' convention, to exchange opinions on the operations of last year, and suggest the best and tried varieties of various fruits. The meeting was called to order at 3 o'clock, P. M., by Judge Daniels, President of the Santa Clara horticultural society, of San Jose, who nominated J. W. Osborn, Esq., of Napa, Chairman, which was sustained unanimously by the association. Mr. D. E. Hough, of Oakland, was appointed Assistant Secretary to Mr. Wadsworth, the Secretary of the horticultural society.

Mr. Osborn, on taking the Chair, briefly stated the object of the meeting, in the following words:

GENTLEMEN:—The object of this convention is to discuss every matter connected with the progress of California horticulture. To gather in the scattered knowledge of our culturists, into a joint stock of experience and ideas, a common fund of horticultural knowledge. Nearly every county in our fruit districts being represented, we can ascertain the speciality of each; and while aiding the new beginner with reliable fruit lists, will avoid a profitless competition against superior excellence in certain varieties; for year by year we will find that each fruit, though in luxuriance through-

out the state, has in some of our counties its most congenial home. And year by year, by this comparison of knowledge, cost of culture may be lessened and certainty of success increased.

Mr. Osborn then called upon Judge Daniels, of San Jose, for some expression of opinion relative to the great questions of horticulture. Judge Daniels in response remarked:

It is impossible for me to tell you how much pleasure it would give me to make known all my experience in horticulture; but, as this is a gathering for the exchange of experiences, it appears to me that the mere statements of one individual could not be of great import among so many well informed on the subject. What I may say, however, will be plain unvarnished truths—facts—known and admitted. Fruit-growing in California, at present, is creating a world-wide repute; for, in the last fifty years, great revelations have occurred, but none so great as has been demonstrated with us. Within the past ten years, the changes by the advance of the sciences have been very great, as has been evidenced in Europe and the Atlantic states. Why, even in California, few believed that what was termed her arid plains and barren hills, bleak mountains and mining regions, could ever produce fruit. But now they teem with the choicest varieties known. If I should take up my subject by departments, it would exhaust your patience, so I will be brief. We have done a little to advance horticulture; in regard to new varieties, we have discovered some, and they have been tested. Apples, peaches and pears will thrive wherever the Saxon race will go, and that is wherever wheat will grow—still they have their choice localities. There is, besides, a large number of fruits which require particular attention in soil and climatic influences, which if known, would prove equal to the knowledge of the varieties most hardy and prolific in our midst. If I should pretend to elaborate each branch of the fruit culture, it would exhaust two hours, and I would rather we should go into the regular business in the same order as last year.

On motion, the recommendation of last year's convention, in regard to peaches was taken up.

The following varieties of peaches were taken up one by one, as recommended for general culture:

Crawford's Early.—No objection being noted, it was retained in the list.

Yellow Rare Ripe.—Mr. Daniels inquired how this peach had done this year. Mr. Osborn said it was spoken well of in Napa. Retained.

Bergen's Yellow.—No satisfaction being given by this variety, it was struck from the list.

Mixon Free.—Messrs. Lewelling, of Alameda, and Osborn, of Napa, give this variety a good name. Retained.

Early York.—Mr. Osborn, of Napa, said the peach had thriven well in Napa. It was a great favorite with consumers, known as the "strawberry peach." Retained.

Mixon Cling.—Mr. Lewelling stated that it never developed on the east side of the bay (Alameda). Put on list for further trial.

Stump the World.—This variety elicited a lengthy discussion. There being

two colors, white and yellow, Judge Daniels recommended the yellow as superior. Mr. Fox, of San Jose, stated his conviction that the white was undoubtedly the true fruit; the yellow he considered an old Mexican with a new name. Judge Daniels thought some authority necessary, as the sole point of objection seemed to be the color. Mr. Lewelling remarked that some trees he obtained from New York had turned out alike to the Crawford peach, similar to that collected at Marysville. The question of color was allowed to stand. Retained.

Crawford's Late.—Retained.

President.—Ripens in September, and was free from curl in Alameda. Retained.

Evard's Late Free.—Put on list for further trial.

Fox's Seedling.—Erased from the list.

Smock's Free.—No curl this year. Retained.

Heath Cling.—Judge Daniels stated that, in San Jose, it was subject to curl, and he thought it would not bear a crop in four or five years in the vicinity of the bay. It was a good peach, however. Put on the list for further trial.

Druid Hill.—At Oak Knoll it did well for first trial. Retained.

Grosse Mignonne.—True variety, large, white blossoms. Retained.

Late Admirable.—Judge Daniels stated that, although it did not bear fruit every year, it was a worthy peach. Retained.

Red Rare Ripe.—It being subject to curl in different localities, was transferred to list for further trial.

Morris White.—Objection was made by Mr. Fox, that the fruit was soft, and would not stand handling; but it was a great favorite with consumers. Retained.

Further Trial.—The following varieties, recommended for further trial last year, were then discussed:

Early Tillotson.—Mr. A. F. Beardsley, for Daniel Gibbs, Suscol, gave it an excellent character, and it was promoted to list for general culture.

Early Newington.—Retained.

Harkies' Seedling.—Retained.

Poole's Late Yellow.—Retained.

Lemon Cling.—Mr. Osborn stated that this variety was a great favorite in the upper end of Napa Valley. It was a profitable peach, came in late in September. Promoted to list for general culture.

Royale de Montrell.—Stands the climate of Santa Clara. Retained.

Litzen's Seedling.—Retained.

Monstrous Pavie.—A large free-stone peach. Retained.

Malta.—Promoted to list for general culture.

For Trial.—Mr. Lewelling recommended a seedling peach, named E. L's peach, to be put on the list for trial. Carried.

Judge Daniels recommended the Mignonette, from Delmas' nursery, San Jose. Carried.

Mr. Osborn recommended the Oak Knoll, free and cling. The cling had borne fruit for three years, free from curl, and the peach was large size and early. Carried.

APPLES.—The following, the recommendations of last year for general cultivation, were then passed on :

Carolina Red June.—Retained.

Early Harvest.—Mr. Osborn said it had done well in Napa. Mr. Fox stated that, in San Jose, the fruit was shed before maturity. Mr. Osborn thought that might be remedied. Mr. Elliott stated that "root grafting sometimes induced the falling of fruit." Judge Daniels thought it strange that it could have such effect. Mr. Lewelling did not think it a first-class apple. Mr. Daniels thought that the lists could be curtailed with propriety; but he asked, if we were not in danger of losing some of the best varieties—some which had not had a thorough test. He thought it well to have a large list, as after time, confidence could be firm in the best varieties. Mr. Osborn desired to know if any one had noticed the tendency of the summer and fall apples to earlier maturity. He thought that his experience proved that, in California, the fall fruits were getting, year by year earlier, from the effects of climate. He noticed some varieties, this year, were a month earlier than a few years since. Judge Daniels stated that, in San Jose, he had not noticed any such change. Mr. Osborn stated that a peach, called the October cling, had ripened in September, and the same had happened with some apples. Mr. Lewelling had noticed some little change. Judge Daniels thought that the soil had an influence on the thriftiness of trees. Mr. Osborn said the example was so glaring that he called the attention of the committee thereto. Mr. Beardsley said that he had a dozen early harvest trees; one tree, this year, required props to sustain it; the others bore, but are indifferent bearers. He thought as the tree became aged it would prove better. The trees dropped some fruit, but the apple was fully formed and grown, but did not show its color. He had determined to place straw under the tree next year, as it was a marketable fruit. Mr. Osborn said, although his trees appeared thrifty, they threw the fruit. Placed on list for further trial.

The Strawberry, American Summer Pearmain, Jonathan, Gravenstein, Smith's Cider, Yellow Bell Flower, William's Favorite, Fall Wine, Porter, White Bell Flower, Roxbury Russet, and Newtown Pippin, were retained on the list without comment.

Rambo.—Mr. Bradley stated that, although his trees were thrifty, they threw their fruit. Retained.

Warner.—Mr. Fox stated that they water-cored at San Jose. Placed on the list for further trial.

Waxen.—Moderately fair apple, but good bearer; drops its fruit in Alameda. Retained.

American Golden Russet.—One of the best of fruits in all sections. Retained.

Esopus Spitzenberg.—Requires patience. At Gibbs, Suscol, last year the trees bore but little fruit. This year they produced a heavy crop. Retained.

Newton Spitzenberg.—Crop keeps well until March in Alameda. Retained.

Gloria Mundi.—Placed on amateur list.

Summer Queen and Sweet Bough were put on the list for further trial.

Trial Varieties.—Red Astrachan.—Reported well of in Alameda, and in the mountains. Do not show their color in Napa. It was elicited in the discussion on this variety, that the fruit showed better color where the soil had lime strongly marked as one of its constituents. Retained.

Talman Sweet.—Shy bearer in San Jose; full at Napa. Set for further trial.

Green Newtown Pippin.—Same result and disposition.

Rhode Island Greening.—Napa gave a good account; but Alameda, Suscol and San Jose differed. Mr. Beardsley stated he never had a doubt of its being a first-class apple, as his crops had shown. Mr. Daniels stated that it specked under the skin. Mr. A. H. Myers stated that it was not a good keeper, although a valuable apple. Mr. Beardsley stated it ripened on or about the fifth of September, and was an early fall apple. Mr. Myers remarked that early ripening does not affect all apples; some will keep longer here than in any part of the world. Mr. Beardsley put the Greening on the same footing as the Roxbury Russet. The question was, the effect of climate; and as it could not be decided, the Greening was placed on the list for further trial.

The following were retained without comment: Quarrendon, Red Cannon Pearmain, Mother, Swaar, Westfield Seek-no-Further, Summer Haglow, Northern Spy, English Russet and Wine Sap.

Garretson's Early.—Had no friends and was stricken from the list.

Baldwin.—does better in cool summers at Napa. Retained.

Tulpahocken.—Has done well at Alameda, but is reported to have water-cored in San Jose. Retained.

Suggestions.—Mr. Hough recommended the Fall Pippin for general cultivation, and all united in giving it a good name. Adopted.

Mr. Beardsley commended the White June Eating; said there was but one tree in the state, that at Suscol; it first ripened in June, but the whole crop was not gathered until July 14th. Adopted for trial.

Mr. Osborn commended the Danver's Sweet; bears yearly; a first rate apple in Napa. Adopted for trial.

Seedlings.—Mr. Fox said that Skinner's Seedling was a splendid fruit, worthy of cultivation. Adopted for trial.

Mr. Beardsley proposed the Summer Rose, which was an early bearer, and a heavy bearer—one of the best of summer apples. It was also spoken well of by San Jose. Adopted for trial.

Mr. Osborn commended the Scotch apple, Hawthornden which he said bore well; had experimented therewith three years, and was satisfied it brought more money than all others. Adopted for trial.

Mr. Beardsley proposed Harrison's Cider, a New Jersey number one cider apple. Had tried it three years. Adopted for trial.

PEARS FOR GENERAL CULTIVATION.—The following varieties were, after a slight review, retained on the list: Fallom, Madaline, Bloodgood, Dearborn's Seed-

ling, Bartlett, Louise Bonne de Jersey, Duchesse d'Angouleme, Doyenne, Boonsack, Seckel, Beurre Diel, Surpasse Virgalieu, White Doyenne, Beurre Bosc, Winter Nelis and Glout Morceau.

Easter Beurre.—Mr. Lewelling remarked that this fruit does not do well when grafted on the quince, in Alameda. Mr. Thompson, of Suscol, gave it a good name in his section. Mr. Daniels thought it would not work well on the quince. Mr. Hough stated that, at Oakland, grafted on the quince, it had attained eight and nine feet in height. Retained.

Maria Louise.—Mr. Lewelling stated the trees grew well, but were not saleable. The tree sheds its leaves and fruit in Alameda. Put on list for further trial.

Beurre Rance.—Mr. Daniels did not think well of this variety in his section. Mr. Thompson said it did well in Suscol. Put on the list for further trial.

Beurre d'Aremberg.—Fruit had not yet perfected but will soon, at San Lorenzo. Retained.

Flemish Beauty.—Did well in Alameda and Napa, but poorly at San Jose. Retained.

Dunmore and Chaumontel.—Were deposed to list for further trial.

Vicar of Winkfield.—Mr. Fox stated that it was a most profitable bearer. Mr. Daniels concurred, and Mr. Osborn spoke well of it, as far as Napa was concerned, Retained.

Further Trial List.—Tyson, Mariam, Hinkel, Beurre, Langelier, Winter Beurre, St. Germain, Van Mons Inconnue, Beurre Clairgeau, Leon le Clerc de Laval, were retained.

Beurre d'Anjou.—Had done very well. Retained.

Fondante d'Automne.—Name was changed to Belle Lucrative, it being the same pear.

Urbaniste. San Lorenzo and San Jose gave this variety an excellent name. Retained.

Ananas.—Said its true name was Jean d'Ete, and ordered to be so enrolled. It is an early pear, small and slow in growth. Retained.

Howell.—Mr. Fox stated that this variety attained a large size. Retained.

Winter Butter.—Struck from the list.

Recommendations.—The following varieties were placed on the list for trial:

By Mr. Lewelling—Bergamotte Crassane.

By Mr. Hough—The Brandywine.

By Mr. Patterson—The English Jargonelle.

The Convention then adjourned at 9 A. M., September 9th.

SECOND DAY'S PROCEEDINGS.—Convention met pursuant to adjournment, and proceeded to consideration of berries.

Strawberries.—The recommendations of last year as for general cultivation, Longworth's Prolific and British Queen were retained; as were also the following recommended for further trial: Burr's New Pine, Ruby, Victoria, Magnate,

Captain Cook, Fillbasket, Monroe Scarlet, Peabody's Seedling, Jenny Lind.

Raspberries.—Fastloff and Knevet's Giant were placed on the list for general cultivation. The Red and Yellow Antwerp were deposed for further trial.

Mr. Hough proposed another variety, *Belle de Fontenay*, which was added to the above.

Blackberries.—Lawton and Dorchester.

Gooseberries for general culture.—Houghton's Seedling, White Smith, Roaring Lion, Golden Seal, Favorite, Round Green, Achilles. The Crown Bob was reputed as mildewey in San Jose, and placed on list for further trial. The Red Warrington was added to the list for general cultivation.

Plums for general cultivation.—Smith's Orleans, Bradshaw, Jefferson, Washington, Imperial Gage, Blue Damson, Coe's Golden Drop, Yellow Magnum Bonum, German Prune, Columbia, Lombard, Prince's Yellow Gage, Green Gage, Early Golden Drop, Lawrence's Favorite.

For Further Trial.—Reine Claude Violette, Boston Imperatrice, Duane's Purple, Schenectady Catharine, McLaughlin, Drap d'Or, Cruger's Scarlet.

It having been ascertained that the White and Yellow Magnum Bonum were one fruit, the name of the latter was struck from the list.

Mr. Case, of Santa Clara, proposed Denyer's Victoria, which was added to list for further trial.

Figs for general cultivation.—California Purple, Brown Turkey, White Marceilles, St. Michaels.

For Further Trial.—White Ischia.

Currants for general cultivation.—Cherry, Red Dutch (true) Victoria.

White Grape and White Dutch having been reported favorably on, were promoted for the trial list.

Further Trial.—Gondonin Red, Fertille de Pallieu, Champagne Red, Black English, Black Naples.

Apricots for general cultivation.—Early Golden, Moorpark, Hemskirke.

Further Trial.—Royal Peach, Turkey.

Mr. Toler, of San Leandro, recommended a seedling, which was named after him, and added to the list for trial.

Nectarines for general cultivation.—Downton, Elruge, New White, Early Violet.

Further Trial.—Stanwich.

DISCUSSIONS.—The question of climatic effects on the ripening of fruit at different times in different localities, came up during the review of varieties, and a lengthy discussion had, without, however, arriving at any definite result. It was stated during the same, that the Bartlett pear ripened in Alameda county some four or five weeks since, and fruit-growers were debarred exhibiting fit specimens. In the exhibit of Mr. A. P. Smith, of Sacramento, which is a warmer climate than Alameda, will be found the same fruit not yet ripened; and, in addition thereto, the steamer *Pacific*, which arrived from Los Angeles (still a warmer climate) on the night of

the eighth, brought a number of boxes of the same fruit perfectly green. These were phenomena that it was important should be studied, as it has generally been understood that in colder and not warmer climates, such result should be attained. It was also noticed that the Seckel pear was growing later in ripening.

The question of improving the quality of eating pears by grafting them on quince stock was debated at length, but with no positive result. This is also an important experiment in California, as it has done well at the East, where it improves in size, color and flavor.

Another Peach.—Myers' Rare Ripe, of Alameda, a fine and early peach, was added to the list for general cultivation.

Adjourned to 4 P. M., same day.

AFTERNOON SESSION.—The Convention met at 4 o'clock, Mr. Osborn, President, in the Chair. The subject of grapes was then taken up, and the following varieties recommended for cultivation: Black Hamburg, Wilmot's Black Hamburg, Black Cluster, Violet Chasselas, McReady's, Early White, Jocelyn, St. Albans, Victoria Hamburg, Chasselas, Fontainebleau, White Muscat of Alexandria, Cannon Hall Muscat (for some localities).

Catawba.—Catawba was placed on the list for further trial, as it has not proven worthy of general cultivation.

California Mission.—The old grapes of California have fallen in the estimation of fruit-growers, as so many varieties of foreign grapes prove superior. It is therefore recommended for culture in some localities, and not for general cultivation.

WINE GRAPES.—Mr. Delmas, of San Jose, recommended the following kinds of grapes as the best for wine, the fruiting of which have been tried by him during the last three or four years, and are adopted by the society, from their knowledge of his culture. As every piece of information, in regard to the wine business, possesses no secondary interest, we give the list entire:

For Red Wine.—Black Burgundy, Black Hamburg, Black Cluster, Balzac, Barbaroux, Cabrunet, Charbonneau Dischia Gris, Large Rosa of Peru, Gros noir d'Espagne, or Large Black Spanish, Gros noir de Guislin, or Large Black Guislin, Lachrima Christi (Tears of Christ) Malvoisie de Berlin, Meunier Noir, Merlean Noir, Mansin, Noir Doux, (Black Sweet), Oeuillade Noir (Black Glance), Poulsare, Tinturier, Noir de Praissa.

The following kinds are recommended for white wine: Blanc Doux (White Sweet), Gros Cadillac, Blanc de Bergerac, Lafolle Blanche, Tokay de Sunel, Reissling.

The following varieties of the grape were recommended for general cultivation: Isabella, if trained high, Black Malvosie, Flame Colored Tokay (in some localities), Royal Muscadine, and Sweet Water.

The following varieties were placed on the list for further trial: Concord, Rebecca, Rose Muscat, Diana, and Early Muscadine.

CHERRIES.—The following cherries were recommended for general cultivation: Holland Bigarreau, Royal American, May Bigarreau, Gov. Wood, Belle de Choisy, Black Tartarian, Black Eagle, Sparkhawk's Honey, Red Carnation, Napoleon Bigarreau, Downton, Florence, Elton, May Duke, Kirtland's Late Morello, Late Duke, Kentish.

The following varieties were placed on the list for trial: Van Schaick and Red Carnation.

DISCUSSION.—After finishing up the fruit lists, a society meeting was held to discuss the best means of arriving at a less expensive mode of reaching the objects of the society. Messrs. Osborn, Wadsworth, Daniels and others addressed the society in this reference. In older communities the back bone and life members of the societies are the amateur culturists—men of fortune, retired from business, enthusiastic in their love of fruits and flowers, an interest shared by their families, affording a marked and staple support to the horticultural interests. In California, a new country, there are none of these aids—no amateurs, no retired fortunes or old estates; and the horticulturists find themselves without support in the community where their exhibitions are held. This induces a disposition to change the locality of their fairs; but, as San Francisco has not, and probably never will have a county fair, it is to be hoped the California horticultural society may be domiciled here a permanent feature in our social progress. No definite action was made on a change of location. Adjourned to 11 A. M., 10th inst.

THIRD DAY.—Convention met at 11 o'clock. Mr. Osborn in the Chair.

ARTESIAN WELLS.—During the morning, the convention were in discussion on the effects of artesian wells on the surrounding country. In this connection there appeared to be general observation of the greater depth required in the common wells this season, showing a far lessened amount of surface water from the continuance of dry seasons, or under drainage by the artesian wells.

[This matter requires careful observation, California springs not being replenished by summer rains. Artesian wells may possibly, in time, prove far other than blessings.—REP. ALTA.]

Another point under discussion was the comparative cost per year of cultivated trees and vines in orchard and vineyard, without, however, coming to any definite result, the soil of each locality in question being so widely different. After some discussion on minor matters, the convention and society adjourned, before which Mr. Osborn delivered the following address:

LADIES AND GENTLEMEN, OF THE HORTICULTURAL SOCIETY:—In reviewing our annual exhibition, we find a largely increased number of good specimens, in every variety of fruits. The number of good apples and pears shown has nearly doubled, and but for the foggy days of the last month, our show of grapes would have been in the same ratio. All the fruit region is represented but the Los Angeles, and on comparison of the product, the different counties will show you that while

each has abundance of good fruit, each has its favorite varieties marked in excellence, showing unmistakeable evidences of congeniality of soil and climate. Let the new beginner but note this difference, and in his planting, if for profit, choose only the varieties having these marks of adaptation to his locality, and he will ensure success. Our society is too young, and has yet too little experience to make perfectly reliable fruit lists of every locality, but much information has been elicited and recorded, and we think, albeit many a man's old favorite has been stricken off, will be found reliable. The grape has had our earnest attention, but for want of present time, not to the extent desired; and we have it now in contemplation to ask the experienced vine-growers of the state to meet with us at our quarterly meeting, in January, for discussion on this important subject. Our lists as published, are put forth with the best knowledge we have gathered, and to our belief, will be found reliable.

The discussions in the convention have elicited much information in regard to the effects of locality on different planting of the same fruit, and our task has been the more difficult from some anomalies of late and early growth, for which we have not, as yet, found satisfactory reason; for while the general rule holds good that winter fruits, in the Atlantic states, are fall fruits here, that there are some marked instances of deviation each way in this rule, the limits and reasons, of which will soon be defined by observant culturists.

In regard to late keepers of both apples and pears, the lists are increasing. Some importations from the more southern states have maintained their character here; but, although these are increasing, and our markets will be well supplied, there can be but little doubt that, in the future, our first-class winter apples must come from the care of our culturists in the selections of choice seedlings.

And before separating for another season, I beg leave to call to each mind the importance of noting the peculiarities of growth in each changing season. A slight difference in fog or sunshine has been found this year to make the unsound fruit of last year, in perfection this; and careful comparison of such data will soon enable us to fix with certainty the California home of each variety.

I thank you, gentlemen, for your hearty co-operation and support, and trust to meet you the coming season in increased numbers, in the good work in which we are all engaged, adding to the stability and comfort of California homes.

FIFTH DAY.—Yesterday closed the annual exhibition of the horticultural fair; and, although the display was, as a whole, one of the finest ever made in any country, the attendance was not commensurate therewith; and, unless San Francisco exhibits greater interest in such matters, we fear like displays will be made elsewhere in future.

Among the additions to the display we noticed a plate of apples, from the garden of A. M. Newhall, Esq., Beale street, between Harrison and First. A Japanese tobacco plant, from H. Donnellan, San Francisco. H. Gushee exhibits a new and compact bee hive with the busy laborers at their work.

WILL CALIFORNIA APPLES KEEP?—This question, so interesting to our fruit men, is now answered in the affirmative.

Mr. Wadsworth, editor of the *Culturist*, originally impressed with the idea that our apples would not keep, presents specimens of apples, grown by Charles Mock, of Petaluma, in 1858, which are now in a state of good preservation. There are three varieties, viz: first, the Hall; second the Green Skin, or Green Cheese; third, the Carolina Greening; all being of South Carolina stock.

Dr. Haile, of Alameda, exhibits specimens of what looks like the Green Newtown Pippin—and we so called it—grown on his grounds in 1858, and now in a sound condition.

Mr. Osborn, of Napa, and Mr. Hill, of Sonoma, have each preserved the Newtown Pippin of 1858, to the end of May, 1859.

It is earnestly desired that other public spirited orchardists will take pains to make like experiments. From experience so far realized, we commend to notice the cultivation of several varieties of apples—and of other fruits—which are being introduced, natives of South Carolina and Georgia.

It appears that trees from those latitudes east, are better adapted to the climate of California for late keeping than trees from the more northern states. Bernard Fox, of Santa Clara, has raised in his nurseries some fifty varieties of southern apple trees, bearing many names quite unknown to us, being mostly seedlings from the Indian settlements.

As our fruit increases, it behooves growers to look to their stock. Trees which this year are in good market standing may be supplanted in public favor a few years hence. It is the design of this report to serve the interest of growers by giving publicity to whatever new suggestions seem to bear upon their interests.

The experience of every grower seems to unite in recommending the selection of nursery trees of one year's growth from the graft in preference to older plants. The mutilation of root is proportionately less in transplanting, and the future hardihood of the tree will repay the apparent delay of growth—which is only apparent, as the third year will prove.

THE TEA PLANT.—Specimens of the Chinese Tea Plant are exhibited by J. S. Silver. They are part of a lot of twenty-four which came this summer from Canton, through Lester Clarke, in their native earth. The transplanting there and here has retarded their growth, but they are making healthy roots.

There can be no doubt of their adaptation to the climate of California; and attention is asked to the culture of this most useful household necessity. Every lady may raise her own tea. The process of curing is not anything to deter us. It will be curious enough if we do not soon teach the Chinese how to make tea better than any we have received from themselves. It is, perhaps, fair to say, that we seldom get tea from them that is free from great adulteration. And the day we substitute our own purer articles, neuralgia disorders will probably begin to decline.

An honorary premium is recommended to the gentleman who exhibits the plants; and who, it is understood, has no speculative views in importing them.

To Mr. John Center, the Committee takes occasion to express a hope that the society will make acknowledgements for the handsome wreaths with which he has decorated the hall. And generally to the florists who, though out of season, have made a creditable display of ornamental plants and bouquets of flowers.

JAMES L. BURTIS,	} <i>Committee on Apples.</i>
G. W. DINNEY,	
E. W. CASE,	
J. E. WOOLSEY,	
JAMES GRAVES,	

The executive committee, in closing up the business of the third annual exhibition, in San Francisco, find that, although in all respects the displays of fruit and flowers excel in number, variety and intrinsic worth any former display made in the state, with regret have to note a manifest indifference on the part of the public, in the well-doing of the society; causing too large a proportion of the charges and labor to fall on those engaged in the active pursuits of horticulture, entailing a heavy tax of time and material on the members of the society. Under these circumstances, incident to a new country, we recommend our successors not to hold an exhibition in either of the cities, unless the fair rooms and fixtures are placed at their service rent free.

J. W. OSBORN,	} <i>Executive Committee.</i>
W. WADSWORTH,	
ALBERT W. WHITE,	
HORACE GUSHEE,	
JOHN LEWELLING.	

IMPORTANT HINTS TO BREEDERS OF HORSES.

[From Herbert's new work on Horses, Horsemanship, etc.]

NOW, as to what constitutes value or excellence in all horses. It is indisputably quickness of working, power to move or carry weight, and ability to endure for any length of time; to travel for a distance with the least decrease of pace; to come again to work day after day, week after week and year after year, with undiminished vigor. And it is scarcely needful to say, that under all ordinary circumstances, these conditions are only compatible with the highest condition of physical health of the animal. Malformation must necessarily detract from speed and power; hereditary disease or constitutional derangement must necessarily detract from all powers whatsoever. Under usual circumstances it would hardly be necessary to undertake to show that quickness of working, or in other words, speed, is necessary to a high degree of excellence in a horse of any stamp or style, and not one iota less for the animal which draws the load or breaks the glebe than for the riding horse of the pleasure traveler before light vehicles. But it has, of late, become the fashion with

some parties to undervalue the advantages of speed, and to deny its utility for other purposes than for those of mere amusement; and as a corollary from this assumption, to disparage the effect and deny the advantage of *blood*, by which is meant descent through the American or English race-horse, from the oriental blood of the desert, whether Arabian, Barb, Turk, Persian or Syrian, or a combination of two or more, or all of the five.

The horse which can plow an acre while another is plowing half an acre, or that which can carry a load of passengers ten miles while another is going five, independent of all considerations of amusements, taste, or what is generally called fancy, is worth twice as much to his owner as the other.

Now the question for the breeder is simply this: By what means is this result to be obtained? The reply is, by getting the greatest possible amount of pure blood compatible with size, weight and power, according to the purpose for which he intends to raise stock, into the animal bred. For, not only is it not true that speed alone is the only good thing derivable from blood, but something near the reverse is true. It is very nearly the *least* good thing. That which the blood horse does possess is a degree of strength in his bones, sinews and frame at large, utterly out of proportion to the size or apparent strength of that frame. The texture, the form and the symmetry of the bones, all in the same bulk and volume possess double or nearer four-fold the elements of resistance and endurance in the blood-horse that they do in the cold-blooded cart-horse. The difference in the form and texture of the sinews and muscles, and in the inferior tendency to form flabby, useless flesh, is still more in favor of the blood-horse. Beyond this, the internal anatomical construction of his respiratory organs, of his arterial and venous system, of his nervous system, in a word, of his constitution generally, is calculated to give him what he possesses, greater vital power, greater recuperatory power, greater physical power, in proportion to his bulk and weight than any other known animal—added to greater quickness of movement and to greater courage, greater endurance of labor, hardship, suffering—in a word, greater (what is called vulgarly) game or pluck than will be found in any other of the horse family.

But it is not to be said or supposed that all blood-horses will give these qualities in an equal degree; for there is as much or more choice in the blood-horse than in any other of the family. Since, as in the blood of the thorough-bred horse, all faults, all vices, all diseases are directly hereditary, as well as all virtues, all soundness, all good qualities, it is more necessary to look, in the blood-horse to his antecedents, his history, his performances, and above all, to his shape, temper, soundness and constitution, than it is to any other horse family.

To breed from a small horse with the hope of getting a large colt; from a long backed, leggy horse, with the hope of getting a short, compact, powerful one; from a broken-winded or blind, or flat-footed, or spavined, or ring-boned, or navicular-joint-diseased horse, with the hope of getting a sound one; from a vicious horse, a cowardly horse—what is technically called a dunghill—with the hopes of getting a kind-tempered and brave one; all or any of these would be the height of folly. The

blood sire (and the blood should always be on the sire's side) should be, for the farmer-breeder's purpose, of medium hight, say fifteen and a half hands high, short-backed, well-ribbed up, short in the saddle-place, long below. He should have high withers, broad loins, broad chest, a straight rump—the converse of what is often seen in trotters and known as the *goose rump*; a high and muscular, but not beefy crest; a clean, bony, well-set-on head; a clear, bright, smallish, well-placed eye; broad nostrils and small ears. His fore legs should be as long and as muscular as possible above the knee, and his hind legs above the hock, and as lean, short and bony as possible below these joints. The bones cannot by any means be too flat, too clear of excrescences or *too large*. The sinews should be clear, straight, firm and hard to the touch. From such a horse, where the breeder can find one, and from a well chosen mare (she may be a little larger, more bony, more roomy, and in every-way coarser than the horse, to the advantage of the stock) sound, healthy and well-limbed, he may be certain, accidents and contingencies set aside, of raising an animal that will be creditable to him as a scientific stock-breeder, and profitable to him in a pecuniary sense.

The great point, then, to be aimed at is the combining in the same animal the maximum of speed compatible with sufficient size, bone, strength, and solid power to carry heavy weights or draw large loads, and at the same time secure the stock from the probability, if not certainty, of inheriting structural deformity or constitutional disease from either of the parents. The first point is only to be attained, first by breeding as much as possible to pure blood of the right kind; and second, by breeding what is technically called among sportsmen, *up* not *down*; that is to say, by breeding the mare to superior (not inferior) blood to herself—except where it is desired to breed like to like, as Canadian to Canadian or Norman to Norman, for the purpose of perpetuating a pure strain of any particular variety, which may be useful for the production of blood mares.

By superior blood we mean that which approaches the nearest to thorough blood. Thus, a half bred mare should never be put to a half bred stallion, as in that case the produce will, in nine cases out of ten, degenerate below the dam; whereas, if she be bred to a thorough bred, the produce will be superior, and will continually improve *ad infinitum*, by adhering to the same process of breeding up. In the second place, a reasonable probability of raising sound and healthy stock can only be attained by carefully selecting parents free from disease, which is either hereditary, or apt to become so.

It is idle for persons of this time of the world, to sneer at the idea of disease or other qualities being hereditary or transmissible in the blood: it is known both medically and physiologically that they are so. All diseases of the lungs and windpipe, known as the heaves, as broken wind, as roaring, whistling, thick wind and the like, are incontestably transmissible. Blindness is, if possible, yet more so, and even when one eye is destroyed by accident, if the other eye, through a sympathetic affection follow it, we should consider it by no means safe to breed from a horse so injured. Lameness, arising from pure accident, is of course not transmissible; but where a

race horse has broked down, as it is termed, in running—that is to say where the sinews, or smaller metacarpal bones, commonly known as the splint bones, have given way, from want of strength sufficient to endure the strain laid upon them—it will be well to observe whether there be not some visible defect of the conformation of those parts, tending to undue weakness: such as disproportionate length of the lower or cannon bone of the fore leg, which can scarcely be too short; or the defect, which is generally called *tying in*, consisting of an improper contraction of the volume of the leg, immediately below the fore knee, and indicating an insufficiency of the splint bone. These malformations are distinctly hereditary. * * * *

From the foregoing, then, may be deduced the following general rules:

1st. The more valuable horses are the most economical for all purposes.

2d. The more “blood” compatible with the size required, the better—the high-bred animal having greater *quickness, strength, bottom, health and vigor* of constitution as well as courage and pluck.

3d. The “blood” should be on the side of the *sire*; that is, the stallion should be thorough-bred, or at least, purer blood than the mare.

4th. Choose a stallion in every respect sound, short backed, well ribbed up, short in the saddle place and long below, with high withers, broad loins, broad chest, straight rump, a high and muscular but not beefy crest, a lean, bony, well-set-on head, a bright, clear, smallish, well-placed eye, broad nostrils and small ears. His fore legs above the knee and the hind legs above the hock, should be long and muscular, and below these joints short and bony. The bones of the legs should be large, flat and free from excrescences—the sinews clear, straight and hard to the touch.

LATE KEEPING APPLES.

Editor Culturist:—As it is pretty generally concluded that late keeping winter apples are a desideratum here, I may be excused for recurring to the subject. I have been interested as to the cause of natural process that prolongs the period of duration of winter apples. The common theory has been, that they only differ from summer varieties in their ripening periods—the perfecting process being completed after gathering—or that the ripest at gathering become mellow first. This may be true as to some varieties, but will not account for what is apparent in others. I find in colored varieties, as of red, that the highest colored, or those most exposed to the sun and air, keep the longest; the light colored, or those shaded by the foliage, become mellow first. This is the case with the Hall. My attention not being called to this peculiarity until last winter, I cannot affirm the rule as uniform; yet, upon this and what is otherwise apparent, I base this theory: that apples are perfect organisms, having the differing relations to durability that are seen in vegetables productions, as annual and perennial, or that sap timber has to heart; so that their keeping depends on their organic perfection, and not the mere obstruction of the ripening

process—though this may be varied. *Lignum vitæ* and other hard woods come from the tropics, and it is affirmed that southern white oak makes better timber than the more northern; so the highest degree of heat produces a more durable organism in the apple as well as in timber products.

The northern varieties are deficient in their organism as keepers. Their period of maturity is shorter; they are now (first September) generally full grown, and if now gathered, would require artificial cold to obstruct the ripening process; whereas the southern varieties, as the Greenskin, Benick and others, are not more than half grown. Winter varieties that are calculated profitably to fill up the full measure of the apple's adaptability as an article of winter and spring home consumption—of ship store and trading demand, should keep through their season by ordinary care.

Your notice, in your July number, of those six varieties I sent you, has had the effect to suggest inquiries and assertions as to their being synonyms of other varieties. Some have mistaken the Pennock for the Benick, the Greenskin for the Virginia Greening. I know the Benick is not the Pennock, and have been assured that the Greenskin is not the Virginia Greening. Most varieties may be identified by peculiarities of growth; and all descriptions are imperfect that lack this clew. As it may serve useful purpose hereafter, I will describe the growing habits and appearances of those six kinds.

Lincoln Russet—erect; wood (of the current year next the sun) light brown, rough, speckled; leaf small, thick, obtusely serrated.

Greenskin—upright, rather delicate though vigorous; wood chestnut brown; leaves large, somewhat folded, coarsely not sharply serrated.

Golden Wiley—upright, moderately vigorous; wood nearly black; leaves flat, sharply serrated.

Benick—very vigorous, head spreading; wood dark brown; leaves large, coarsely, rather sharply serrated.

Carolina Greening—moderately vigorous; wood reddish brown, covered with white down; leaves thick, flat, sharply serrated.

Hall—moderately vigorous; wood light brown, quite speckled; leaves rather folded and obtusely serrated, glossy. The tree is disposed to overbear. To come to its full size and excellence, generally half the fruit should be thinned out, or a half, or a sufficiency of the fruit spurs cut out, thus preventing an excessive setting. To have it ripen in perfection, some have advised to gather while wet with dew, and immediately barrel up tight; the import of which is, that they should be put up sufficiently damp and close, as to prevent shrivelling or the evaporation of flavor; for apples, like men, may outlive their good qualities. Apples, like pears, may be classed as melting and crisp; the latter includes the Newtown and Newark Pippin. The Benick and Lincoln Russet belong to this class; these are less subject to shrivel by exposure to the air.

Before closing I wish to advert to what I think may be regarded as a popular fallacy. I allude to the prevailing disposition to reject small apples without reference to their quality. Nature, as a general rule, puts up her morceaus in her smaller

products, in meats and fruits. The small Green Gage is best among plums; the Seckel, Rostiezer, Tyson and winter Nelis among pears; the Nutmegs among peaches, and the Joe, winter Catline, English Golden Pippin, Lady, Hall and other kinds among apples. Analogously, the same reasons that reject small apples will reject all small fruits, as cherries, strawberries, gooseberries, etc. All plums, apricots and half the peaches now cultivated. To set the subject in its true light, we will state the reasons pro and con. The first objection comes from those who raise apples, not to eat themselves, but to sell to others; and is founded in the prevailing fallacy in those who buy fruit to eat, that there is more "glory in eating" a pound of inferior large apples, than a pound of superior small ones; for nine out of ten will choose the former at enhanced price over the latter. Large apples are gathered in less time and, of course, at less expense; but let us examine the reasons for the fallacy. The Americans are charged with being a very "go-aheadative" people; we are in such full "tilt" for money, and here in California to make our "pile," that we really have not time to eat. The idea of dispatch is connected with a big apple or pear; the European aristocracy, who live to eat, spend hours over their meals, appreciate the small Golden Pippin; and Downing says the Lady apple brings the highest price in the market. The disposition and condition that can appreciate intellectual improvement, social conversation and home enjoyment over mere money making, can appreciate values and excellences separate from magnitude.

To ascertain the best apple in your orchard, turn in your hogs—it is said they will soon find it. In the family circle, the Hall mixed with the Roxbury Russet, Bellflower and their equivalents, will be picked out and eaten first. So, I suppose, all who raise fruit for family enjoyment, will not reject the superexcellent small unless its cultivation be too expensive; and what this will be as to the Hall we will now inquire. It has been demonstrated that more bushels or pound per acre are produced in varieties of medium size and under, than by sizes over medium. When it is desirable to raise large quantities of apples, as it will after a while be, for stock-fattening and other purposes, small varieties will be the most profitable. They may be permitted to fall from the tree without injury to their keeping, and thus greater quantities can be stored at less expense. Let me not be understood as advocating the cultivation of small apples exclusively; I only design to show that interest or enjoyment need not reject them. But I do assert that the monstrous pippin and such like, as to size, are unprofitable without counting their abated product from high winds.

In conclusion, I beg leave to suggest that a standing committee, to decide on the merits of fruits, etc., *ad interim*, is desirable. The arrangements at fairs, for display and test, does not supply the desideratum. Many summer apples must ripen on the tree; they may be housed and keep some time, but at the expense of their peculiar flavor. An immense display of unripe and over ripe fruit may excite admiration, but not tend to bring out the best to public notice. Could not yourself and several other gentlemen of taste and leisure, constitute such a standing committee?

C. MOCK.

PETALUMA, Sept. 10th.

Our correspondent will see, on examination of the present number of the *Culturist*, that the fruit-growers' convention, held in this city, is very nearly the "desideratum" of which he speaks; for, not only are the merits of fruits, as regards their qualities and value as market varieties, discussed, but their adaptation to certain locations of soil and climate; points of great interest and value to the future of California fruit-growing.

There is not a doubt but that stated meetings held much oftener than annually, at which comparisons of the same or similar varieties of fruits could be made in their seasons of ripening, would greatly aid in furnishing reliable data as regards many of our most esteemed, soft and early summer fruits; but the difficulty lies in finding a sufficient number of fruit-growers, who can spare the time to attend upon such meetings. The subject has been proposed again and again, but nothing more has been done than to assemble once a year in convention. That we attach high value to this subject needs no further proof than the number of pages we devote to the proceedings of the fruit-growers' convention. We would be willing to be made one of the committee of ten, to hold monthly, or even semi-monthly meetings in this city or Sacramento, for the purpose suggested by our correspondent; but the difficulty of getting the other nine, or even a committee of five together regularly, will be found an insuperable barrier to the project.



GRASSES OF PUNTA REYES.

Editor Culturist:—The dairy lands of Punta Reyes consist of rolling hills, with swales between that are more or less springy. Fogs supply surface moisture. Here is pasture all the year round; on the first of January, the hill range is covered with a very fine fiber, bunch-grass, that is five to six feet in height at its full. Mixed with this is a coarser variety not so nutritious. Cattle browse off the finer grass and then eat up the second best. These grasses renew their growth as they are eaten off.

Another grass, like June grass, with a much finer leaf, and not exceeding twelve inches in length, covers some land, and while it lasts is preferred by cattle, on account of its sweetness; but it has a shallow root—ripens and dies out in April. After this grass runs out, its place is supplied by a mixture of red and white clover that reaches a height of eighteen inches. About the middle of July the clovers run out; then comes up, all over the dry spots, the wild poppy; and this pretty carpeting adorns the surface till the fall rains come, and other grasses more vigorous overshadow it. It should be known that, so far from the wild poppy being, as usually supposed, a profitless weed, it is a valuable grass. Not only do cattle thrive upon it—eating leaf and flower—but it gives them herbage when other grasses fail. This faculty of blooming, when all else dries up, is invaluable to the herdsman. We must not judge of the capacity of the wild poppy by what we see of it in the usual way. We sus-

pect that its weight of herbage might be readily quadrupled by cultivation, and its nutritious quality proportionably increased. If, upon untilled land, it sustains our herds in thrift, what may we not expect if its roots are encouraged to spread in subsoiled ground?

Depend upon it, men of California, we must turn our minds to some means of securing for our cattle summer green food. And it is not among the ordinary grasses of old acquaintance, that we need to look. We must watch the hill-sides, and note well whatever has verdure in the dry season. It may be too much to expect full pasture from any grasses in the dry season; but if we find half pasture, to season the balance of dry food, it will be a great thing for farmers.

There is a species of wild cheat, that covers about two thousand acres of dry and sandy granitic ridge, and which has great fattening properties. It greens about the first of August, and ripens its seed in May. It grows three feet high, and bears a course but very tender blade. It is exceedingly nutritious and cattle are very fond of it. It has among it a considerable show of red top clover, whose growth is apparently aided by its shading.

All through this cheat the bushy sun-dial is mixed, which, by the shade it affords, and by its faculty of sponging up the fog and dripping it down upon the ground, greatly stimulates the growth of the grasses. So much, that if these bushes were removed to make room for more grass there would be a shorter crop certainly. The richest pickings are nosed out by cattle under the immediate shadow of the bush. This cheat, though not so drought-proof as the wild poppy, is worthy of attention. It fully makes up for the difference in the greater quantity and quality of its herbage.

We have spoken only of the highland grasses: the grasses of the moist swales, or land grooves, between the ridges, are perennial. During the long summer these swales are green; the chief growth is a coarse-bladed grass that attains a length of five to seven feet, with an under growth of a finer bladed variety and some mixture of clover. This the cattle luxuriate upon by day, while, at night, they always retire to the higher grounds, and there they partake of the upland pasturage as a desirable change of food—never omitting, when it is to be found, a considerable nibbling of the golden poppy.

We are indebted, for the facts here presented, to the Messrs. Laird, of Punta Reyes, and we shall gladly hear about grasses from all parts of California—being convinced that this branch of agriculture is, at this time, of the highest importance.

ANTHRAX.

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HORSE HOES.—This valuable implement continues to be improved, and it is now made so as to be capable of expansion to any desirable width; indeed, it may be used either as a horse hoe or cultivator, without difficulty. The advantage of the horse hoe over the cultivator is the separation of weeds by the modification of the Langdon contrivance in its rear, which, while it permits all the earth to fall through, the teeth separate the weeds, leaving them on the surface of the soil to be wilted by the sun.

# Editor's Repository.

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WE have devoted a large space, in the present number, to the proceedings of the California horticultural society and fruit-growers' convention. We believe no apology is necessary; because everything that we can say upon the subject of horticulture and the adaptation of our soils and climates to fruit-growing, is looked upon with the deepest interest, not only in our own state, but throughout the eastern. Large numbers are already turning their attention to fruit-growing, or awaiting only the developments that the present efforts of horticulturists are producing, to determine their embarkation in the prosecution of the pursuit.

The proceedings of the fruit-growers' convention, and its action in determining the relative value of the different varieties for market culture is of incalculable advantage to the new beginner, both in time and money. Eight or ten years of practical experience cannot but carry with it much of usefulness in every department of horticulture in California; and it is this experience that we make record of, and believe it will be appreciated.

If, then, our pages do not this month present that varied character they usually possess, it is only because we have given place to other matters of greater interest to our readers.

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**NEXT YEAR'S STATE FAIR.**—So completely have the Sacramentans succeeded in everything pertaining to a well ordered, well conditioned and successfully managed state fair, it is becoming a question of grave importance, as to whether our succeeding fairs should not have a permanent locale at the Capital. If the object of these annual gatherings of the people is their own benefit, and through them, the great interests of agriculture and manufactures are to be subserved, instead of conducting or holding them merely for the accommodation and pecuniary interest of the cities to which they have heretofore annually migrated, then is Sacramento the only best place at which the state fair can be held for many years to come.

It is decidedly the one only great agricultural center of the state—as San Francisco is the great commercial emporium. If the purpose of these fairs is to bring out the largest display of our improved breeds of animals, the finest of our fruits, grains and vegetables, our new and improved agricultural implements, and place them in contrast and comparison, in order the better to know which is the *best*, there is no point in the state that can equal Sacramento; because there is no other city that can command—owing to its geographical position—so large an attendance.

The argument so often used by those favoring the annual migration of the fair, which is “to give this or that city or town the benefit of it next year,” is but a weak argument in its favor. We have supposed these fairs were for the benefit of the agricultural classes, rather than merely to pour a stream of gold for a time into any city or town. A larger number of people can assemble at Sacramento with their animals, agricultural products and implements, at less cost to themselves, than at any other city or town in the state. Let us, then, have our state fair located permanently at Sacramento; let every county or district in the state have its local society, and invite the co-operation



of adjoining counties, upon equitable terms, and the interests of our agriculture will be better subserved than can be by a state fair with the present enormous expense incident to its migratory character.

**FRONTISPIECE.**—We present our patrons, in this number, a truthful and beautifully executed engraving of the agricultural pavilion, of Sacramento county. This fine building, erected in Sacramento, at the expense of the county, is one of the largest ever constructed for agricultural exhibitions in any country. Its exterior is commanding, and beautiful in architectural design; its interior capacious, and admirably arranged; it is a credit to its projectors and builders, and is a distinctive mark of progress in the right direction. A progress, so truthfully and admirably portrayed in the October number of the *California Magazine* that we appropriate the same with our fullest endorsement.

"The recent exhibition at the great state fair, held in Sacramento, from September 13th to the 23d, will speak more for the progress made in the manufactures, and all the wondrous and varied productions of our soil, than could be realized from a single glance at any other similar display. Self-reliance, backed up with strong common sense, refined taste, skill, indomitable perseverance and untiring industry, has proved, even to the doubtful and the wavering, that success is within the reach of those who toil for it.

From the work of the intelligent artizan and sturdy laborer to the refined and elevating exercises of gentler minds and fingers, progress has been made self-evident at this exhibition. No one, we should think, could walk around the magnificent, well furnished, and tastefully arranged pavilion, and look upon the beautiful works of art—from an humble and unpretentious pencil or water-color drawing, to the most elaborately worked fabric of silk—and not see how much of earnest faith, and patience, and hope, have been called into being through the fair hands that wrought them; or examine into the wonderful contrivances and triumphs of mechanical skill, apparent on every hand—from an eyeless miner's pick to the complicated workings of the steam engine—and not feel proud and hopeful that the day of a brighter destiny is dawning upon the dwellers on this far western coast.

The display of fruits, vegetables and grains, in their infinite variety, beauty and size, would not only compare well with that of any other state in our glorious Union, but far eclipse them, one and all; for, in these, our soil and climate enables us to throw down the challenging gauntlet triumphantly, knowing that they cannot equal—much less excel us.

Besides, it was but a few years since that we imported nearly all our breadstuffs, wines, cheese, butter, honey, pickles, preserved fruits, refined sugar, hops, printing paper, furniture, friction matches, brooms, glue, starch, soap, candles, perfumery, camphene, leather, stone-ware, drugs, essential oils, paints, cigars, chairs, tubs, buckets, willow-ware, salt, wagons, buggies, carriages, saddlery and harness, mining tools, agricultural implements and mechanical tools, churns, brass work, piano fortes, billiard tables and cues, book-binding, jewelry, sculpture, quicksilver, steam engines, and numberless other articles, now manufactured, to a greater or less extent, in our own state; and such has been the success in the production of cereals, that the quantity grown already exceeds our demands for home consumption, and consequently are becoming an important article of export. The healthy and almost incredible productions of the vine, and the flavor and fineness of our wines, have given them a world-wide celebrity. Our gold has supplied the coffers of nearly all the treasuries of the world with important additions to their stock of bullion. Quicksilver from the mines of New Almaden and Gaudalupe has, for several years, been a profitable article of export, as well as of home consumption.

At one time, it was a matter of some anxiety whether or not the supply of beef, cattle and sheep would not decrease to such an extent by over-consumption as to justify the expectation of a famine in fresh meats; but, although our population has been great, and the consumption heavy, such has been the ratio of increase, that our markets have been well supplied, and yet the number of animals of the finest breeds, has been nearly doubled. Many of our horses will already compare favorably with the celebrated stock of Kentucky and Tennessee: if any person doubts this, let him go and

examine for himself. Recently a fine assortment of French and Spanish Merino sheep were imported, and such was the fineness and weight of the fleeces taken from them, that they were sold at almost fabulous prices—some even as high as one thousand, five hundred dollars *each*. Quietly, but surely, has been the progress made in live stock of all kinds; the raising and improving of which has been attended with very profitable results. Therefore let us all take courage to renew our efforts and assist in that progress that shall be lasting.

These, and many more that might be enumerated not only illustrate the progress we are making as a state and people, but tell of the gradual retention among us of a portion of that wealth which formerly passed out semi-monthly for the benefit of the exporter. Therefore, every one of both sexes who devotes his or her talents to the development or production of any article of consumption or of export, be it ever so simple, becomes a public benefactor, and as such, is entitled to the gratitude of a commonwealth.

With this view, we consider that an unsuccessful competitor for a premium at these annual exhibitions, contributes as much to advance the interests of a state, and often to his own fortunes, as the successful one. Actual success is not to be measured, in our estimation, by the gain or loss of a prize. Besides the hope and aim that stimulate the attempt for success, secures the possession of the dignifying principle of self-reliance, as much to the one as to the other; and, to the true man, defeat this time will be nothing more than the creator of a determined resolve by renewed efforts, on his part, to place his success next time beyond the possibility of defeat."

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**THE RESULT OF ARTESIAN WELLS.**—The following *editorial*, appeared in the *California Farmer* of recent date. A more unfair or unwaranted attack upon artesian wells and the results of irrigation, we have never seen; and betrays a want of candor in the treatment of a subject of the highest importance to the interests of California horticulture, illy becoming the conductor of an agricultural journal. We give place to the attack of the journalist upon Mr. Lathrop, and Mr. Lathrop's defense of himself and his horticultural practices.

"The results of Artesian Wells, or their *evils*, are beginning to be felt in and around San Jose. In some places they have so drained the earth of all moisture, that from the surface-earth half and three-quarters of the vegetation which once grew luxuriantly, has now become parched up, dead or dying; and where the water has been used freely we notice luxuriant weeds which were taking all the goodness out of the soil. And we noticed also, that those fruit trees that had been thus irrigated were not bearing fruit. In fact they could not bear fruit, as they had only made weak succulent shoots the previous year instead of fruit-branches. We could not but see the difference lately, while passing over the San Jose road, from the Mission, within two miles of the city, between the grounds of B. S. Fox & Co., nurserymen, and Mr. Lathrop's orchard.

Mr. Fox has a fine young orchard that promises well; small trees in full bearing, and two-year-old trees heavily laden with fruit. Among his trees we saw dwarf pear and dwarf apple trees of beautiful growth, in bearing; and all these were the result of *cultivation*; instead of *running water* among the trees, Mr. Fox had *run the plow and cultivator*, much to his credit and profit. In the large and very showy orchard of Mr. Lathrop, near by, on the same road, we saw the contrast: large and handsome trees, really beautiful in form, but they were nearly all fruitless; at least those in sight of the road and as far as the eye could see. And upon examination it was evident to us that the growth was almost all succulent and woody, with scarcely any fruit-bearing branches. This was caused by the false notion that irrigation alone could establish an orchard. Another evil we saw, and this was one of magnitude: the orchard was choked up with tall weeds, the pig-weed and red-root, and these were three and four feet high and in masses, and would soon scatter their millions of seeds, which in their turn will spring up and exhaust the richness of the earth *that belongs to the trees*, as the present generation of weeds has done to the present orchard. Such a sight in such an orchard tells us plainly that there is a great want of reflection in such a system of cultivation. The large quantity of water produces weeds, that eat out the vitality of the soil. And hear we have a *double* proof of the injury of this useless system of irrigation, in the unnatural

growth and barren trees, and thrifty growth of noxious weeds, while the orchard presents a pitiful view of the waste of wealth, resulting from an ignorance of the laws of cause and effect.

IRRIGATION AT SAN JOSE.—*Editor Culturist*.:—In the *California Farmer* of August 26th, is an editorial, headed "The Result of Artesian Wells," in which my orchard is made the striking example of their evil results: the whole article is calculated to mislead practical operators. I propose, therefore, with your permission, to correct some of its errors. That I have irrigated my orchard freely, is true; that it has injured it, I am not conscious. I have had extensive experience in irrigation, and my confidence in its utility is by no means impaired. That my orchard has made a weak or "unnatural growth, without fruit or fruit spurs," is untrue. My orchard blossomed abundantly last spring, and but for the very heavy late spring frosts, I would have had a large crop of apples this year—and even now I expect to get twenty-five thousand pounds of apples this season. I will state what it has done: The oldest trees were set three-years ago last spring. The year after setting, it produced four bushels; last year I received in cash for apples eight hundred and eighty dollars, besides what were consumed by a large family. This year I estimate my crop at twenty-five thousand pounds; and I defy the Colonel to show an orchard in this state, better set with fruit spurs, or with a better prospect for fruit for another year. I took the first premium for the best one year old orchard in the state. The next year, also, I took the first premium at the state and county fairs, for the best apple orchard—I have not entered it for premium since. I took the second premium for the largest and best collection of apples at the California horticultural fair last year.

My apples may be seen now at C. L. Kellogg's, number 111 Sansome street, and at Wm. Bailey's, number 95 Davis street: they will speak for themselves, for quantity and quality. It is truly astonishing that this sage philosopher of cultivation, should say that the difference in early bearing between Mr. Fox's dwarfs and my standard trees, was all owing to cultivation. Does he not know that dwarfs are worked on dwarf stocks, and that that is the cause of their earlier bearing? Is it not strange that the Colonel did not see that all my trees near the road were the Northern Spy variety; and does he not know that they require from fifteen to twenty years in the Atlantic states to come into good and full bearing? Indeed, he did know, for I told him all about it, when he was taking his observations. I told him, further, that the orchard was bearing well a little back from the road, and that those trees were placed on the front, to protect the orchard until the hedge would have time to grow.

The contrast drawn between Mr. Fox's manner of cultivation and mine, is all a fiction. He uses essentially the same plows and cultivators that I do; and he has a large well and uses water as freely as I do, and more so. Mr. Fox sold out his former nursery and came here, because he could get much water, and no man here uses it more freely than he does. Why did the Colonel select my orchard for a scape goat, to carry off all the sins of bad tillage for the state? Why did he call special attention to my weeds, by saying the idea was one of "magnitude?" Why speak of my weeds six times in one short article? Why pity my ignorance, and shed his Crocodile tears over my "waste of wealth?" I will here say, for his comfort, that I have spent nothing in irrigating, that I have not made by irrigating; and not all of that—there is one shot in the locker yet. Why cannot the Colonel see that that which will make weeds grow will make trees grow? What he means by red-root I do not know; I have no weed that I know by that name. Why does the Colonel endeavor to enlarge and magnify my disgrace, by saying that my weeds are three and four feet high, thus making them seven? Perhaps the Colonel does not understand the utility of these pig weeds. They spring up in mid-summer, and shade the ground, and prevent the rise of alkali to the surface. In the fall they are mown down; in the winter they are mown again; and in the spring, when their "millions of seeds" have sprung up to about six inches in height, I take a large plow, with a revolving colter, and cut and turn them all under, which makes a good dressing of manure; and as they decay their vegetable acid neutralizes the alkali in the soil. The ground is then clean to receive the warm summer sun to start the trees.

I have it, from good authority, that Mr. Hovey, the celebrated horticulturist, is in the habit of



collecting pig weeds, and hauling them to his barn-yard, and rotting them in layers with his barn-yard manure, and then hauling them to his nursery grounds to replenish the soil. How is it that the weeds have choked and robbed my trees so that they have not strength to bear, and yet the water has given them such a rapid growth that the trees are all "really beautiful," but can't stop to bear? How is it that he could examine the fruit spurs on an orchard of ten thousand trees, by simply riding along the road, on a gallop, by twilight? How is it that Mr. Fox has won such laurels of honor in his mode of cultivation, and I merit public ignominy for my folly, while our method of cultivation is the same. There is a key to this whole matter, without which it cannot be understood. Mr. Fox takes the *Farmer*; I do not. At the time the Colonel took his observations, as he passed my orchard, I was present; on seeing me and Mr. Fox by the road-side, he stopped. Mr. Fox soon left. The Colonel made sundry inquiries about my orchard, and method of tilling, etc. He flattered me much, and said: "you do not irrigate, of course." I replied, "I don't do anything else." He then asked me to subscribe for his paper; I refused; he pressed his claims until I told him that my principle objection, was a personal dislike to the editor. He then asked on what I predicated that dislike; I told him plainly; when he left, seeming quite willing to let me alone, and if he had done so, this article would never have been called into existence.

I leave it to the reader to judge whether, if I had subscribed for the *Farmer* and told him I did not irrigate, if the whole phaze of the matter would not have been changed. My orchard would have been fruitful, and not a weed been seen; it would have been as good a proof of the uselessness of water as Mr. Fox's has been.

L. B. LATHROP.

**ARTESIAN WELLS AT SAN JOSE.**—*Editor Cultivist*:—We, the undersigned, are citizens of San Jose and its vicinity, and we are all using artesian wells for irrigating fruit trees; and being satisfied that Col. Warren's late war, carried on in the *California Farmer*, against our wells and against irrigation in general, is an unjust one, and calculated to mislead the public in reference to that important feature of our agricultural operations, and cast a reproach upon the most distinguishing characteristic that our valley possesses, and which has earned for it the honorable appellation of "The Garden of California," we desire to say, that our extensive nurseries, which have sent out their hundreds of thousands of thrifty trees through the state; our floral department and even our kitchen gardens are dependent upon our artesian wells; in them lies the secret of our success; and we wish to enter our protest against any such newspaper attack upon them.

It is by the help of water that we are able to present such an astonishing growth of fruit trees, and so wonderful for their early productiveness. It is by giving to our plants and trees a plenty of their natural aliment, that our fields and gardens are clothed in lively green the whole year, and in blooming flowers, as well as the richest fruit a large portion of the year. Take away our artesian wells and we are shorn of our strength. The Colonel says: "The results of artesian wells, or their evils, are beginning to be felt in and around San Jose. In some places they have so drained the earth of all moisture, that from the surface earth half and three-quarters of the vegetation which once grew luxuriantly has now become parched up dead or dying."

Where, or by whom, these evil effects have been realized we do not know; one thing we do know, that the surface strata of earth, in and about San Jose, is as full of water as it has been in previous years; and has to be carried off all through the dry season in open ditches. They may be seen now on both sides of the road leading from San Jose, to San Jose Mission, and no such evil results have been realized or heard of by us, and we really believe that no such evils exist; we prize our artesian wells and the practice of irrigating, as highly as in any former time.

That irrigation makes weeds grow, we admit; and that method of treating the soil, that disables for producing weeds, we are willing to leave to those operators who are willing to reduce to practice the Colonel's theories. The natural elements for trees are, earth, water, air and light; and when a tree has an ample supply of all these, it will be the most vigorous, healthy and productive, and will bear the best quality of fruit.

Such ungarded articles, from such a source, tells us plainly that there is great want of reflection,

in such a method of editing an agricultural journal, doubtless growing out of a want of knowledge of "cause and effect," and may result in great "waste of wealth" to those who carry into effect the Colonel's theories.

L. B. LATHROP,  
S. C. BOSTICK,  
FREMAN GATES,  
JOSEPH ARAM,  
GEO. W. TABLETON,  
D. C. VESTAL,  
JOSEPH LEE.

**IRRIGATED FRUIT.**—For the last three months we have heard a great deal said upon the subject of fruits, grown with and without irrigation; and, for a time, it seemed as though every one almost, had determined to abandon the entire system of artificial watering, in the production of everything in the fruit and vegetable line. Even Horace Greely caught the cue, and expressed himself opposed to irrigation; certainly his opinion could not have been formed from any knowledge or experience of his own upon the subject. We ever have and ever shall maintain that a judicious irrigation can be practiced to advantage in California, wherever a supply of water can be made available, at a reasonable cost. We have only to look at the products on exhibition at the state fair, and we see the largest, the fairest, and the most delicious fruits to be the products of irrigated grounds. We do not claim that all the fine fruits there exhibited were irrigated, or that fruits thus grown will keep as long or bear transportation to a distant market as well as smaller fruits of the same varieties grown without irrigation; but what we do claim is, that larger, and far more beautiful specimens are the results of a judicious irrigation upon a great variety of soils.

The largest and finest specimens of peaches on exhibition, were from Ingalsbee's, Coloma, irrigated fruit; and irrigated fruit, from that locality, has, from year to year, obtained the highest premiums from our societies, over all competitors. Irrigation is practiced among the foot-hills to an extent but little imagined by the occupants of our lower alluvial valleys; and solely because it is found indispensable to the growing of the largest and best specimens the state has yet produced. Why then do we hear this new, sudden and violent tirade against irrigation? and from whom does it come? Why, in every instance, from those whose lands do not require it, or are so situated that they cannot irrigate if they would. Are these the persons to decry irrigation and its advantages, or judge of its adaptability? Yet they are the ones who do it, and after all are beaten, year by year, at their own game of choice fruit-raising, by those who will practice it. The fact is, just this: there are those who are situated upon alluviums, so near the level of the rivers that no irrigation is required, and they go on giving their opinions and practices, as though everybody else possessed just the lands they do; and in this lies the error of a voluminous writer, on "Practical Husbandry," in the columns of a cotemporary; his experiences and practices, only avail for good with the few who chance to be similarly situated with himself, and in no wise adapted to the condition of the great bulk of our agricultural lands.

There is also an unfairness on the part of those who would decry irrigation. They assume that the constant flooding of lands, to promote the growth of tree or fruit, cannot but work injury to the tree. Now it is not proposed by even the most strenuous advocate of irrigation, to "constantly flood the land;" all that he urges is just enough and no more than enough to promote the most perfect development of both the tree and its fruit; and this he contends cannot be injurious; and if the experience of the past is anything in proof, he has assumed a position that cannot be overthrown.

**APPLE SEEDS THAT WILL VEGETATE.**—A Sacramento correspondent wishes to know where he can procure apple seeds that will be more likely to vegetate than basswood cucumber seeds. We cannot recommend you to any seedsman in the state, for the reason that we know of no one who

keeps apple seeds, good or bad. If there are such, they don't advertise their seeds; and the reason probably is they cannot warrant them.

If your object is to experiment upon orchard-planting, by growing the seed in the places where the trees are to remain, as intimated, you can afford to buy enough of our cheapest, well matured apples to furnish you with the requisite quantity of good sound seed that you know will vegetate; and, as four-fifths of seed thus procured, will grow, with proper care, the quantity required for even a large orchard, would be comparatively small. Our correspondent desires to know how to proceed in the method of rearing an orchard from seeds planted where the trees are to remain; and he wishes the mode suggested, to be applicable to "our dry plains." Now this is the first instance in which we have been called upon to make known our mode of procedure. A great deal of fault has been found with our suggestion, without ever knowing what we really proposed. We said, but for the inconvenience of thus planting an orchard, we would assuredly do so; and, from that moment, we were assailed, from a certain quarter, because it would interfere with the sale of nursery trees. And what if it does, so that better and longer-lived trees can be reared, than can possibly be in any other way?

There may be soils on which it is wholly impracticable to raise an orchard by the plan proposed, or by any other. There are soils wholly unsuited to orchard-culture, and it may be that the "dry plains," of our correspondent are of this character. All that we claim is, that where a tree will grow—climate and soil being favorable—there the tree will be better, because longer-lived, and less exposed to suffer from drought or sudden atmospheric changes, if it be allowed to strike its roots deep below the surface of the soil; call those roots tap-roots or by any other name; and that the tree is in no way benefitted by their destruction or mutilation.

We would fit all soils intended for orchards, by deep and thorough pulverization, not only where the trees are to stand, but the entire soil of the field. If the "dry plains" cannot be thus fitted, they are not well suited to orchard culture. It is usual to keep young orchards in crop for the first two or three years; the constant stirring of the soil, incident to such cropping, proving highly advantageous in the destruction of weeds, but the crops should be of the proper kind, or great injury is done the trees. The cereals, as wheat, oats or barley, are exceedingly injurious to young orchard trees, and should never be cultivated among them. They not only exhaust the soil of more moisture as well as nutriment, than ordinary hoed crops, as corn, potatoes or other vegetables, but the heat and reflection from the bright straw and stubble of the cereals will alone destroy many young trees.

Potatoes, beets, carrots, any hoed crop is suitable, along with which to grow an orchard. Prepare the ground as for an early crop of these products, and plant your apple seeds in the same rows at suitable distances, devoting three feet square to the apple seeds; let no vegetable come nearer than this; sprout your apple seeds previous to planting, so that you are quite sure of their vegetating; then drop three in a place, two inches apart, and cover a suitable depth—one and a half or two inches, depending on the porosity of the soil, and cultivate them as though they were so many pets, that you thought a great deal of, till they put out their rough leaves and are starting vigorously; then, if more than one in a place, draw all but the strongest, and cultivate carefully by keeping down all weeds, and the surface of the soil mellow and friable, but not to exceed an inch or two in depth.

Early the ensuing spring, graft every tree at or near the surface of the ground—the after cultivation to be precisely the same as though rooted trees had been used from the nursery. If your ground is not suited to orchard culture, planting the seeds where the trees are to stand will not make it so; but if trees can be made to succeed on the "dry plains," back of the Sacramento river alluviums, those that are permitted and encouraged to send their roots deep beneath the surface, in a properly prepared soil, either naturally or artificially made, will be the trees most likely to succeed in defiance of drought or other climatic influences.

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EFFECTS OF MULCHING ADOBE LANDS.—M. Waltball Jr., a scientific and successful grain-grower, located eight miles south of Stockton, gives us a singular instance of the effects of an extra-



ordinary mulch upon the adobe lands, which constitute the bulk of the soil in his neighborhood. The country around is interspersed with large oaks, which are allowed to remain upon the lands, devoted to crops, because their roots penetrate to a depth entirely below that reached by the roots of annual grasses or grain crops. The greater portion of adobe lands, in fact, dry down and crack open to a depth of two feet or more, and this is the case even under the oaks; and the fact that plowing can be done as well under the trees as elsewhere shows that there are few or no surface roots.

On piling the straw, from a threshing machine, a depth of four or five feet, and allowing it to decompose for the space of three years around an oak tree, where the plow had run unobstructed the required depth, in preparing the land for the grain crop, it was found on removing the rotted straw, that the tree had thrown its roots to the surface, completely filling the soil, for yards around, wherever straw lay, with a complete network of roots as large as a man's fingers, and that the soil neither bakes, cracks, or dries out throughout the entire summer.

We have here the effect of excessive mulching from which we can draw a valuable lesson. It may not be desirable to mulch orchard trees even though the ground, during the process, may easily be kept moist; for what is to become of them when the mulching is discontinued? Certainly the roots thus drawn or kept upon the surface, will suffer the moment the mulch is decayed, discontinued or gone, and the tree will as necessarily sustain irreparable injury. Mulching will undoubtedly have the effect to produce surface roots, by retaining the moisture near the surface; but, unless the mulch can be continued from year to year, the benefits to be derived from it are quite problematical. But any method by which the roots of trees can be made to penetrate beneath the effects of superficial excitants and influences, is the one to be relied upon to promote the steady growth as well as health and consequent longevity of the tree.

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**RINGING GRAPE VINES.**—E. B. Crocker, Esq., of Sacramento, had on exhibition at the state fair, specimens of grape vines, on which he had practiced the "ringing" process, which consists in removing a narrow ring or circle of the bark entirely around the branch, thus cutting off the return of sap from the leaves below the place girdled. The effect of the process is to greatly enlarge the size of the fruit, but always at the expense of the branch or limb. For to obtain the most satisfactory results from the operation, the girdle of bark removed should be wide enough to prevent any return of sap whatever, which destroys the limb after the season in which the operation is performed is passed.

Grape vines, trained upon the renewal system, in which the bearing shoots of the present year are entirely removed to give place to new bearing wood the following year, can be girdled and made to produce greatly enlarged fruit with very little or no detriment to the vine or its roots. In the specimens exhibited by Mr. Crocker, it was evident that the process had produced the enlargement sought, as the fruit was exhibited side by side with that grown without ringing, upon the same vine. To the amateur, desirous of producing extraordinary specimens, ringing or girdling becomes an available process; and, properly conducted, ranks among the more interesting of horticultural experiments.

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**HONEY BEES.**—We saw nothing at the state fair that could be eaten, so beautifully fine as the honey, on exhibition by the various apiarians of Sacramento county. Harbison, with his improved patent combination hive, made a fine display. A. J. Biglow raised a perfect, three feet in height, pyramid of ten pound boxes of the most delicious honey we ever tasted from the comb; we know this from the fact that one of said boxes was placed at our disposal. Mr. Biglow is a very successful propagator of the honey bee; he uses and prefers the Langstroth hive, to any other he has ever seen; and if his success is at all attributable to the use of any particular form of hive, his, with the Langstroth patent, would indicate its superiority over any other in use. We visited his apiary and was highly pleased with his mode of management.

N. P. Simmons, Esq. is another amateur bee keeper, in the suburbs of Sacramento and in the

immediate neighborhood of Mr. Biglow. He also uses the Langstroth hive, and to one not accustomed to the management of bees in the improved hives, and the transfer and creation of new colonies at will, we would recommend a visit to his establishment. We have hardly seen a more skillful handler of bees than Mr. Simmons, or one who can so easily impart practical information upon their treatment and management.

He seems to have a reason for everything he does, and a perfect readiness in imparting his ideas to others; and his arguments in favor of the Langstroth hive, coming from a man having not the slightest interest in their general introduction and use, beyond the fact that he believes them the best yet invented, is certainly much in their favor.

The state society's first premium, for the best honey, was awarded to Mr. E. B. Jones, Sacramento county. It obtained this enviable notoriety for its purity and richness, and certainly excelled any we ever saw from the white clover or any other honey-producing flower or product. The plant from which the bees procure this finest of all honey, is called the honey weed, the botanical name of which we are unable yet to ascertain.

It is said to possess this remarkable peculiarity, that the honey is not found in the flower, but in cells containing a sweet liquid from which the bees fill themselves, in many instances, from a single one of them. We have a curiosity to know what this honey weed is, and have made arrangements for the procuring of specimens for analyzation, which, as soon as procured, will be furnished, with engraved illustrations.

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**SANTA CLARA VALLEY AGRICULTURAL SOCIETY.**—The third annual fair of this society commences on Tuesday, the eighteenth inst., and will continue four days. The officers of the society are, President, Wm. Daniels; Vice Presidents, Cary Peebels and Coleman Younger; Treasurer, Ransom G. Moody; Directors, Louis Prevost and Heman H. Winchel; Secretary, Chas. B. Younger; Chief Marshals, for the fair grounds, Jas. F. Kennedy; for City Hall, Bernard S. Fox. This society has the fortune to be a well managed institution, commanding the confidence of the community as well as of its own members. That it has thus far proved itself of great value to the agricultural and industrial interests of Santa Clara Valley, none can deny; and the interest manifested by its members in its continuance, is a guarantee of its future usefulness.

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**STATE AGRICULTURAL SOCIETY'S EXHIBITION.**—On taking up the *Alta California*, of Friday, Sept. 23d, we find in it an excellent review of the late state fair, and willing to give it our endorsement, we copy it entire.

"This evening closes the sixth annual exhibition of the state agricultural society, in all respects, seemingly, a splendid success to the state and society, whose officers have accomplished miracles of industry in building, collecting, and arranging such an enormous industrial exhibition in a ten-year old state. Californians may well have an honest pride in this exhibition; and the citizens of Sacramento may well congratulate each other on the credit due their city in the completeness and perfection with which all the intentions of the society have, this year, through their material assistance, been made manifest to the whole people of our state, in an exhibition of the increased amount of our industrial resources. Of course, parts of the exhibition were defective, and some of the minor details might have been bettered. It would be almost an impossibility that such a mammoth enterprise could be otherwise; but in the great whole, no one of our former exhibitions has been so perfect, none so generally satisfactory, although it is questionable whether the outside aids made use of to draw a large influx of people into Sacramento city is of a benefit to the society, no one can blame our Sacramento neighbors for making the most of the occasion after their enormous outlay; and to their credit be it said, no complaint has yet been heard that their accommodations have not been complete, and all their terms liberal. Not only in present success, but as an earnest of the future, it will require a mighty effort on the part of any community to make an exhibition satisfactory after such an effort as has just been made in Sacramento; for, unless an extreme liberal spirit exists in the community in which the annual fair will next be held, the "City of the Plains" will,

for some years, wear the laurels. We are not posted in the financial state of the society, but it seems to us, after such material aid from Sacramento, that wherever the fair be held, the affairs of the society will not be placed in new hands with such a beggarly state of finances as was the case after the last annual fair at Marysville. We think no arrangement is made for the next exhibition until the regular meeting for choice of officers in January, at which time it will be proper to present the claims of this portion of the state to in turn have the opportunity of presenting our resources before a gathering of the people, without the travel and expense which has been required to reach this institute for the last three years. San Joaquin, Yuba and Sacramento have had their turn, and now the southern counties on the Bay will thus have a chance at the famous carnival; but forget it not, that at the time of choice many propositions will be laid before the society, and the majority of best intentions carry off the fair.

**PACIFIC AGRICULTURAL SOCIETY, OF SAN MATEO COUNTY.**—We have received, from J. M. Curtis, Esq., Secretary of this society, certificates of membership to be issued to those who may desire to become members of the society. The objects of the society are set forth in their constitution as follows:

#### ARTICLE II.

It shall be the object of this Society to promote the interests of Stock-raisers, and to encourage the improvement of practical and scientific Agriculture and Horticulture, in all their departments.

#### ARTICLE III.

**SECTION 1.** Any person may become a member of this Society by the payment, annually, to the Society, of five dollars, as a fee of membership.

**SEC. 2.** Each member of this Society, on payment of his initiation fee, shall receive, from the Secretary, a Certificate of Membership, a printed copy of the Constitution and By-Laws, and all published transactions of the Society; shall be eligible to office, shall be entitled to vote, and shall enjoy the use of the Library.

**SEC. 3.** Any person already a member of this Society may become a member for life, by paying twenty-five dollars additional to the Society.

#### ARTICLE IV.

The Officers of this Society shall be a President, two Vice Presidents, a Secretary, a Treasurer, and two Directors, all of whom shall be elected by ballot at the annual meeting, and shall hold their office for the term of one year, or until their successors enter upon their duties.

#### ARTICLE IX.

**SECTION. 1.** The Society shall hold at least one Market Fair each year, for the sale and exchange of whatever articles the members of the Society may exhibit for such purposes. In the interim of the Annual Fairs the Society may hold Fairs at any time, on the petition of at least fifteen members of the Society to the Board of Managers.

**SEC. 2.** None but members of the Society shall exhibit any articles for sale or exchange on the Society's Fair Ground.

**SEC. 3.** The Annual Meeting of the Society, for 1859, shall be held on the sixteenth day of August, and each year thereafter on the day of the Annual Fair.

**SEC. 4.** All the Meetings and Fairs of the Society shall be held in San Mateo county.

The Officers of the Society are, Hon. T. G. Phelps, President; John Cumming, First Vice President; D. W. Connelly, Second Vice President; J. M. Curtis, Secretary; Geo. H. Howard, Treasurer; D. S. Cook, and R. J. Weeks, Directors. We have not been advised as to the time of holding the Society's first fair.

**ALAMEDA COUNTY AGRICULTURAL SOCIETY.**—The first annual fair of this society will be held in the Pavilion, at Oakland, commencing on the fourth of October, and to be continued to the fifteenth. The cattle show and exhibition will commence on the eleventh and continue to the fifteenth. The society cordially invite the co-operation of all who may feel an interest in the progress of our



agriculture as well as the manufactures of our state. The mechanics and manufacturers of San Francisco and adjoining counties are particularly invited to come forward and compete for the society's premiums.

A plowing match is to take place upon suitable grounds, and a trial of reapers or mowing machines is determined, if only stubble is found to operate upon. The fact is, T. Ogg Shaw is manufacturing machines in San Francisco, that he is willing to match against the world; and ready, at all times, to put them to the test upon any kind of cuttable substance, from hazle bush down to the finest lawn grass. His splendid exhibition of agricultural implements of home manufacture at the late state fair, was a credit to himself and the pride of the state.

We predict for the Alameda county fair, a success only exceeded by the state fair just closed.

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ATLANTIC AND PACIFIC RAILROAD CONVENTION.—This convention, composed of delegates from the whole Pacific coast, has adjourned after having unanimously recommended the central route, and the only really feasible one, between latitudes thirty-eight and forty-two degrees.

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CONTRA COSTA AGRICULTURAL SOCIETY.—The first annual fair of this society will be held at Martinez, commencing on Wednesday, the twelfth inst. Ample arrangements are in progress by the citizens of Martinez, for the convenience of all who may feel disposed to encourage, by their presence and exhibitions, the agricultural and horticultural interests of that fine county, and we predict a decided success. We shall endeavor to be there.

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OUR METEOROLOGICAL TABLE.—Those who will take the trouble carefully to note the remarks that are appended to the monthly table, published in the *Culturist*, in reference to our atmospheric changes and phenomena, cannot but notice the very near approximation of the weather to the predictions as made by Dr. Logan, based upon data derived from a knowledge of the great wind and water currents of the ocean. We say of the ocean, because it is from the ocean wind currents, tempered by the waters of the same, that we receive our peculiar characteristics and modifications of climate.

Nothing is more common than, year by year, to hear of the changes that are apparent in our climate; either we are getting more rain or less, more cold weather or longer winters, or more frequent showers than formerly; and almost all are ready to account for these supposed changes—for they are nothing else—from causes altogether to local in character; such as the use of the waters of the mountain streams for mining purposes and irrigation, by which a greatly increased evaporation is induced; and one writer attributes the supposed change, in a measure, to the largely increased exhalations or the breathings of men and animals. Now when it is considered that our ocean winds are constantly sweeping over our state in some direction, both in summer and winter, with a power that displaces hourly, and drives far into the interior, day by day, every particle of moisture the air may contain as the result of evaporation from the land, it is easy to imagine how small the affect of such evaporation must be in giving character to our climate.

We must go outside of the moisture from the breathings of men and other animals, and the petty evaporations caused by the operations of men, for the great causes that govern our climates and their changes; and, until something shall occur to change the direction of the great ocean water currents that impinge against our shores, or its winds that sweep so irresistibly inland, we need look for no important or material change in the general features of our climate.

## METEOROLOGICAL TABLE,

For Sacramento, California; being an abstract of Observations made during the month ending August 30th, 1859; Lat. 38°, 34', 41", N.; Long. 121°, 27', 44", W. Height of the lower surface of the mercury, 41 feet above the sea at San Francisco. The observations are made three times a day conformably with the hours adopted by the Smithsonian Institution. The indications of the barometer are given corrected for capillary action, and reduced to the temperature of 32° Fahrenheit, but not corrected for its height above the sea level. The rainy days are included under the head of cloudy and foggy, and are also put separately to show the number of days on which ain fell during the month. The force of the wind is estimated and registered in figures from 0 calm to 10 a hurricane.

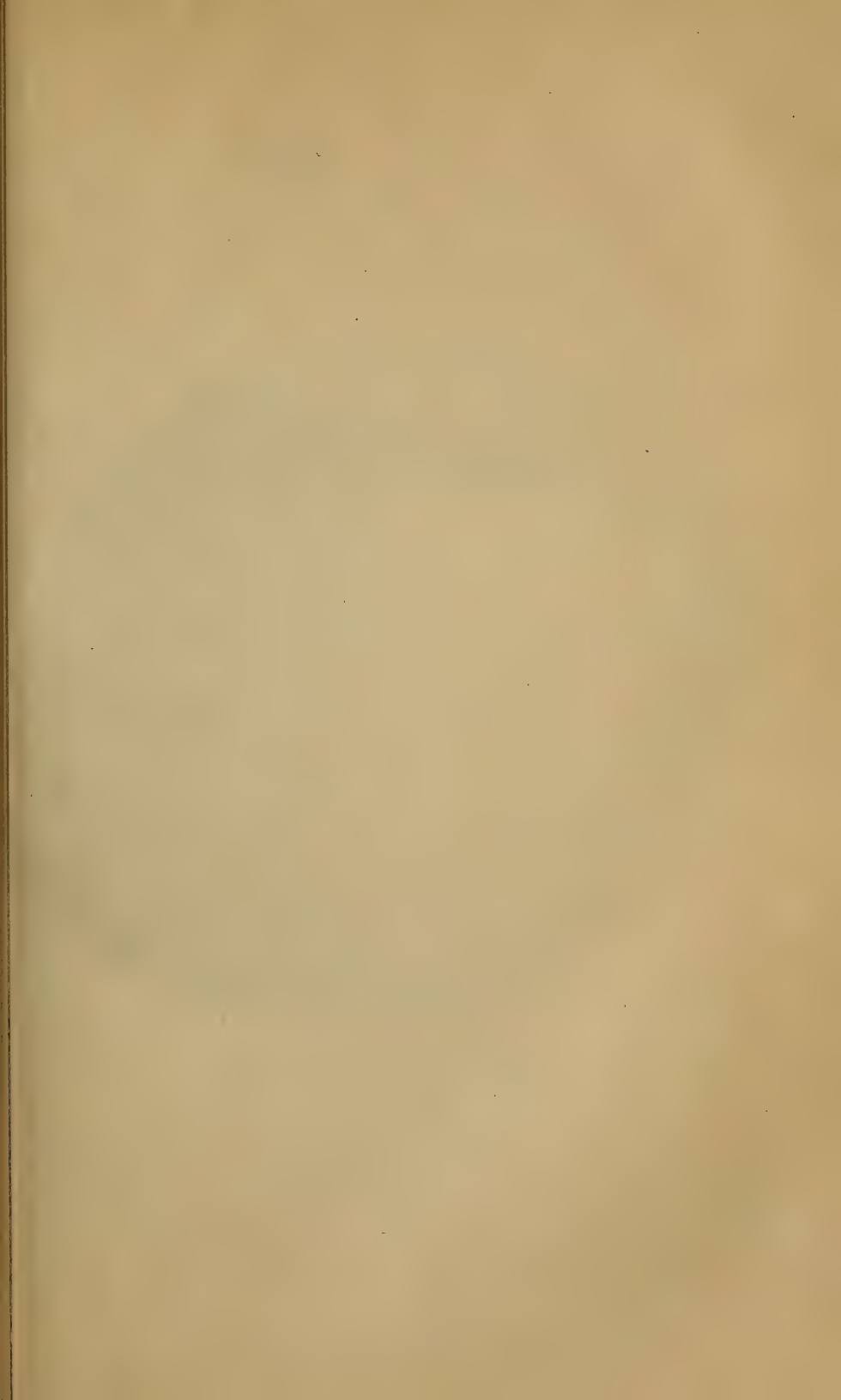
By THOS. M. LOGAN, M. D.

| JULY, 1859.                         | 7h. A. M. | 2h. P. M. | 9h. P. M. | MONTH.         | AVERAGE OF SEVEN YRS. |
|-------------------------------------|-----------|-----------|-----------|----------------|-----------------------|
| Barometer, Maxima .....             | 30.080    | 30.011    | 30.029    | 30.080 inches. | + 0.010 inch.         |
| “ Minima.....                       | 29.797    | 29.754    | 29.731    | 29.731 “       | + 0.003 “             |
| “ Mean.....                         | 29.923    | 29.882    | 29.871    | 29.892 “       | — 0.005 “             |
| Thermometer, Maxima.....            | 69.00     | 85.00     | 75.00     | 85.00 deg.     | — 1.66 deg.           |
| “ Minima.....                       | 58.00     | 66.00     | 61.00     | 58.00 “        | — 0.67 “              |
| “ Mean.....                         | 62.48     | 72.29     | 66.69     | 67.16 “        | — 2.37 “              |
| Force of Vapor, Maxima.....         | .476      | .564      | .537      | .564 inches.   | — .031 inch.          |
| “ Minima.....                       | .365      | .350      | .403      | .350 “         | + .016 “              |
| “ Mean.....                         | .409      | .481      | .462      | .451 “         | — .003 “              |
| Relative Humidity, Maxima.....      | 82.00     | 78.00     | 78.00     | 82.00 per ct.  | — 0.17 p. ct.         |
| “ Minima.....                       | 65.00     | 29.00     | 60.00     | 29.00 “        | + 5.02 “              |
| “ Mean.....                         | 72.74     | 62.61     | 70.68     | 68.68 “        | + 2.45 “              |
| Number of Clear Days.....           | 24        | 24        | 29        | 25 2-3 days.   | + 3 days.             |
| Number of Cloudy and Foggy Days.    | 7         | 7         | 2         | 5 1-3 “        | — 3 “                 |
| Number of Rainy Days.....           | .....     | .....     | .....     | .....          | — 1 1-3 “             |
| Quantity of Clouds .....            | 0.6       | 0.5       | 0.1       | 0.4            | — 0.9                 |
| Quantity of Rain and Fog.....       | .....     | .....     | .....     | .....          | .....                 |
| 1st Days and 2d, Force of N. Wind.. | 0 0.0     | 5 1.8     | 0 0.0     | 1 2-3 0.6      | + 2-3 — 0.3           |
| “ “ N. E. Wind..                    | 1 1.0     | 0 0.0     | 0 0.0     | 1-3 0.3        | — 1-3 — 0.5           |
| “ “ E. Wind....                     | 0 0.0     | 0 0.0     | 0 0.0     | 0 0.0          | — 2-3 — 0.5           |
| “ “ S. E. Wind..                    | 75 2.0    | 1 3.0     | 1 2.0     | 5 2-3 2.3      | — 2 1-3 + 0.5         |
| “ “ S. Wind....                     | 11 2.2    | 12 3.0    | 22 2.1    | 15 2.5         | + 4 1-3 + 0.2         |
| “ “ S. W. Wind..                    | 2 2.0     | 5 2.8     | 6 1.9     | 4 1-3 2.2      | — 1 1-3 + 0.1         |
| “ “ W. Wind....                     | 2 2.5     | 5 2.4     | 2 0.5     | 3 1.8          | — 2-3 + 0.2           |
| “ “ N. W. Wind..                    | 0 0.0     | 3 2.0     | 0 0.0     | 1 0.7          | — 1-3 — 0.2           |

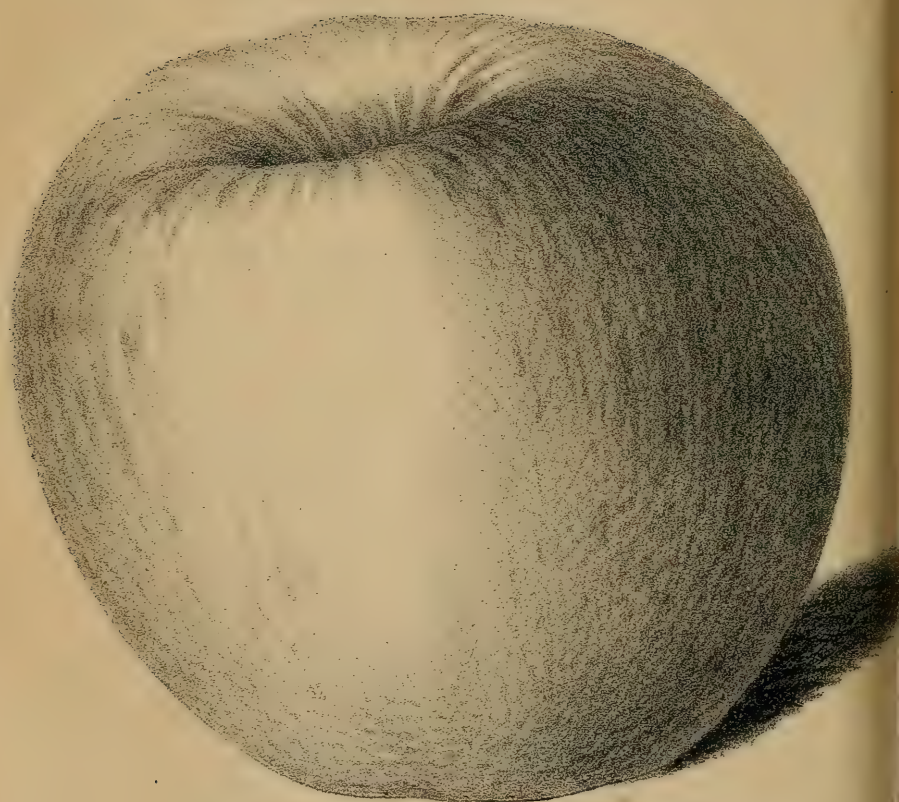
## Thermometrograph.

|                                          | DEG.  |                                                | DEG.  |
|------------------------------------------|-------|------------------------------------------------|-------|
| Highest Reading by day on the 7th.....   | 89 00 | Mean of all Highest Readings by day.....       | 75.03 |
| Lowest Reading by night on the 28th..... | 52.00 | Mean of all lowest readings by night.....      | 55.39 |
| Range of Temperature during month.....   | 37.00 | Mean daily range of Temperature during mo..... | 19.64 |

REMARKS.—The refrigerating influence of the cold waters of the Pacific, alluded to in our last month's remarks, has continued to obtain, during the whole month of August, and contributed to enhance the interest of the subject of our summer climate in a manifold degree. Indeed, with the exception of the "heated term" in June, we have enjoyed, nearly the whole summer, instead of the extra tropical heat which generally characterizes our valleys, the cool climate peculiar to the immediate coast. It is to the contrasts of temperature between the ocean and the land that is due the development of the strong sea-winds that have tempered our summer climate; but these contrasts only exist during summer. At other seasons the ocean is quite as warm and the land cooler; and, whatever the degree of aridity, the sudden and extreme rarefactions do not occur in the winter. Hence autumn and spring are both warmer than summer on the immediate neighboring coast; and, as the present unusual circulation ceases, we should not be surprised to experience warmer, or at least, more genial weather in September and October, at Sacramento, than we have during July and August just passed. Of the most notable events of the month, we have to chronicle an extraordinary manifestation of the Aurora Borealis, on the 28th, commencing about 9 P. M. and disappearing at 3 P. M., next morning. The appearances exhibited during this extended period were so various as to render it impossible to comprehend particulars in a description that must necessarily be brief. We would observe, however, generally, that in its particular movements and fantastic changes, were recognized all of the characteristic features that mark this peculiar phenomenon. From its close resemblance to the aspect of the sky before sunrise (whence its name originated) to the formation of the luminous arc, darting forth palpitating rays towards the zenith, of white, pale red and deep blood color. These lambent streams were noticed to shift gradually from west to east and *vice versa*. The summit of the arc was not more than about from six to eight degrees above the horizon, and appeared to coincide with the magnetic meridian. The most remarkable feature, during more or less of the whole display, was the long continued gleaming of a dark rose or carmine illumination at the western extremity of the arc—this rose light, passing occasionally along the left with a fluctuating movement towards the other end. The whole northern sky, at one time, seemed to be a cupola on fire, supported by columns of divers colors, relieved and intensified by dark shadows, or rather streaks.







VANDERVEE

# THE CALIFORNIA CULTURIST.

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NOVEMBER, 1859.

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## A RETROGRADE AGRICULTURE.

YES reader, a retrograde agriculture; and by this, we mean the practice of any system that instead of retaining the virgin fertility of our soils under repeated croppings, is annually rendering them less and less productive. It becomes a question, then, of grave import: are not the agriculturists of California, to a very great extent, pursuing a retrograde system of agriculture? We are always adverse to the utterance even of truths, that shall seem like a disparagement of our progress in any laudable pursuit, unless we can, by so doing, at least indirectly, promote the advancement of the same. An unwelcome truth, however, properly brought to mind and made the subject of consideration and investigation, may oftentimes be of the greatest advantage to the advancement of human progress.

It is with this view that we now present the unwelcome truth that, following too closely in the footsteps of our agricultural predecessors of the Atlantic side, we are practicing a retrograde agriculture. Our grand breadth of acres, devoted to the production of the cereals, with perhaps the exception of a few of our richest and choicest alluviums, are rapidly becoming less and less productive, and in a ratio altogether greater than is presented in any other clime or country. It may seem a startling assertion, but it is none the less true; and when we properly investigate the causes that tend to this condition, we are not surprised that it should attain.

A large proportion of the grain-growers of California are from the more western of the Atlantic states, where, upon comparatively new and fertile soils, they had cultivated successive crops of the cereals, with but little apparent diminution of their fertility, or amount of annual yield; and they come here and practice the same system, but with very opposite results—nothing less than a marked and rapid deteriora-

tion of the fertility of every acre they touch. With a soil equal in fertility to any they ever worked before, they find the same number of years of cropping exhausts it more rapidly; and, however humbling it may be to our pride as skillful agriculturists, we are not yet applying a remedy. But why should not our lands, of equal fertility with the best of the states of the Atlantic, produce the same crops an equal number of years, without suffering any greater deterioration?

The reasons are obvious, and yet we believe they have escaped the observations of many. Our first crops of cereals, vegetables and fruits, with good cultivation, are greater beyond all precedent than the crops of similar soils with almost any other climate than ours. Sixty or seventy bushels of grain to the acre, is an enormous yield, and yet, upon our new lands, is not considered remarkable; but such yields cannot be frequent without a proportionate exhaustion of the soil. Thus, with our large yields annually repeated, nothing but the most rapid deterioration of soil, under the ordinary system of culture, could be expected, and we find the effects visible everywhere; our grain lands are producing but little more than half they did only eight years ago.

Another reason is found in the fact that, owing to our peculiarities of climate and seasons of vegetable growth, there is not that recuperative process going on tending to a renewal of fertility that we find in all lands subject to rains at all seasons. We wait for the autumn rains to moisten and mellow the soil before we can plow or hope for our seed to vegetate; then the whole growing season is between seeding time and the harvest, which usually ends in June. From that time, on to another seeding time instead of the soil spontaneously—as in other countries—producing a crop of vegetation, as of clover and even weeds, that can be plowed under as a fertilizer, it remains totally dry and unproductive. It is this total neglect of anything like a return to the soil of the constituents of vegetation taken from it by successive croppings that, in the main, is working the great deterioration complained of.

Could our stubble lands afford even fair pasturage for the summer months, to be eaten by stock, and converted into a more available manure than the dry straw turned under or suffered to decompose upon the surface, then might we hope for some little good from this source; but all know that we have not the pasturage in any green herb or grass, nor is there rain or moisture sufficient to permit or aid in the decomposition of even the stubble of the field. And as the great bulk of all the straw, from the cereals in the state, is either at once sold from the land, or permitted to waste, in immense heaps, for years without removal or return to the soil, what else than a rapid deterioration of its fertility could be hoped for?

But this is not all; for even where attention is given to a return of straw or any undecomposed vegetable fiber to the soil, and it is plowed under in the most uniform and perfect manner possible, owing to the coolness of the rains of winter, and their entire absence through the heat of summer, but a small part of the covered vegetation will decompose sufficiently to become the food of plants, except it be of succeeding years. We have been assured by the raisers of wheat on adobe lands, that it is not unusual to find the straw of wheat that had been plowed under two or three



years previous, still undecayed. The winters, with their excess of rains, and the summers, with their almost total absence of the same, and with but little moisture in the surface soil, render the decomposition of all vegetable fiber imperfect or exceedingly slow.

It is on this account that so little value is placed upon coarse manures in California; for, where it remains so long undecomposed in the soil, it cannot but serve to render the soil drier than it would be without it. This being true, as regards the application of coarse or unfermented manures to our grain fields, it becomes a matter of serious inquiry, as to how their fertility is to be maintained. Can guano and other concentrated fertilizers be procured in quantities sufficient, and at a cost that will warrant their general application? Already we are the producers of grains to that extent, that, with the present prices of labor, but little more than the bare cost of production is realized. Is it policy to go on, under our present system of impoverishment to our lands, and only realize the cost of production? If more animals were reared in proportion to the quantity of cereals produced, our farmers would not only find themselves with a better market for their supplies, but it would be at a far less deterioration to the value of their lands.

But it is urged that we have not the food for animals. Under our present system of farm management we have not; but with a proper system we have. It is the keeping of animals on a farm that enriches it; and just in proportion to the increase of animals a farm is able to maintain, by which the straw and other forage is converted into valuable manure, just in that proportion will its fertility be maintained and, with judicious management, even increased. We do not make this remark as applicable to farms wholly devoted to stock-growing; because we are aware that, with our present indigenous grasses only, as forage for animals, it is the easiest matter imaginable to over stock them. Not that the soil is ruined by the excess of stock, but that the grasses are not permitted to grow. It may be all very proper to harvest a grain field at the season of the ripening of the grain; but no one would think of cutting or grazing it continually, from the time it was high enough to furnish a bite for animals. So with our stock ranches; a greater part of their natural grasses are annuals, or at best but biennials; and the constant croppings they endure are, in many instances, working their rapid destruction. But this is no argument against the more general rearing of animals upon grain farms, and always to an extent fully equal to the consumption of the otherwise wasted forage it produces. We must have more of a mixed agriculture; our stock ranches are rapidly being denuded of their forage, with no provision for the future sustenance of our increasing herds, and our exclusively grain farms, are rapidly deteriorating in fertility from excessive cropping, with no return of nutriment for further crops.

In another article, in this number, we shall show, under the head of Winter Irrigation, that there is yet another source of fertility that is destined to become of inestimable advantage to our grain-growers, and that a retrograde agriculture need not necessarily be ours.

## STEAM PLOWING.

NEARLY all our eastern agricultural exchanges are commenting upon the different successes attained by the numerous inventors of steam plowing machines, or machines for tilling the soil—for some of them do not act upon the principle of the plow, but pulverize the soil by digging or picking it, by the use of various devices attached to revolving cylinders, etc. The successes are quite varied in their character; the greater part only partial, the machines seeming to require further improvements before they can be considered complete in their performances; whilst a few are so near what is required that no room is left for doubt as regards their final complete success.

To give our readers some idea of the progress made and making in this most important of agricultural operations, we subjoin the following, from the *Country Gentleman*, as showing, also, the relative progress in this country and Europe. The editor says: For the following remarks on this subject, including a full description of Mr. Fawkes' new steam plow, we are indebted to President Kennedy, of the Polytechnic College, Philadelphia.

In common with many who has had the good fortune to be present at the five days public exhibition of Fawkes' steam plow just closed, I have been reminded by the scene, of the description given of the starting of *Fulton's* pioneer steamer on her experimental voyage to Albany. The two events have indeed many points of resemblance. That was the dawn of the era of successful steam navigation. Half a century has rolled round, and we stand at the opening of the great eventful era of steam cultivation. One Pennsylvanian triumphed over the tempest and the tide. Another now triumphs over the wasteful powers of the wilderness, and rides the conqueror of the prairies. Verily, Lancaster county, proud as she is of her Calhoun and Buchanan, will be prouder still of her Fulton and her Fawkes, whose birth places are but twelve miles apart, and within her wide borders.

Let us not, however, amid our exultation, claim too much. It is not contended by Mr. Fawkes or his friends that he is the first to conceive the idea of applying steam to the cultivation of the soil. There was, if I mistake not, a steam plow at the London exhibition of 1851; but it awakened no attention. Farmers went there, not to see it, but to see *M' Cormick's American Reaper!* In all the magnificent palace of industry, that was the grand agricultural attraction. Well do I remember hearing a jolly English farmer, as he stood with his hands in his pockets of his "box coat," surveying the reaper, say, "T'will be a pretty good sort of a thing after we've improved it." How I might have retaliated by going over to the English steam plow and saying the same thing. But America has done far better than to improve on an English model. Mr. Fawkes has invented a machine, new in principle, and distinct in its mode of operating. Let me explain. The great difficulty in the way of success in plowing, by steam is expressed in one word, TRACTION. The English early tried two broad tired driving wheels; but these sank too deeply into moist and loose soil, and of course failed. Mr. Boydell, who deserves immortality for his unceasing

efforts and liberal expenditure, conceived the novel idea of running his engine on rails, to be laid down and taken up by the engine itself. This he accomplished by hinging seven or eight stout, flat wooden rails together by both ends, so that they would form a polygon outside and in the same plane with the driving wheels, and revolving with them, each rail in turn being laid down in front and taken up behind its proper driving wheel as the latter rolled over. In this very ingenious way Mr. Boydell gets traction, but at a great expense of power. Mr. Bray, another Englishman, adopts a similar plan. Owing probably to the high cost, great loss of power and expense of working on soil, the English agricultural press have, during the last year, partially *abandoned* the idea of using traction engines for tillage, and have advocated the invention of Fowler, Williams and Smith, on the cable principle. The engine is similar to our powerful portable farm and saw-mill engines, and is provided with a drum revolving horizontally between the four wheels. This engine is placed, for plowing, in one corner of a large field; a tender with a similar drum is placed in the next corner, and over the drums of both engine and tender an endless wire rope passes. To this rope a gang plow is attached, which, by the revolution of the rope is made to travel between the engine and tender. These are moved regularly down the opposite margins of the field which is thus gradually plowed. The other cable machines slightly differ from Fowler's, by having the cable to pass entirely round the field, instead of across it. Smith's machine costs about two thousand five hundred dollars at the factory—will plow seven acres a day, and requires the attendance of an engineer, six men, and a horse and cart to bring water. Fowler's machine costs two thousand eight hundred dollars at the factory—will plow eight acres a day, and requires an engineer, four men and a boy to tend it.

As I write, the mail brings me the report of the grand trial of steam plows, for the prize of the Royal Agricultural Society of England, just held at Warwick. We have, therefore, the latest reliable information of the performances of the best English machines. But one traction engine competed, that of Mr. Romaine, which is a return to the old and very properly discarded plan of two driving wheels, and therefore need not be described; especially as the report says it is "*practically inefficient*, even after the vast sums expended on it."

The prize was awarded to Fowler's cable machine, above described, "for the most economical application of steam power to the cultivation of the land." For the purpose of comparing the best English steam plow with the American, I quote from the same report, that "on a stiff, badly drained piece of land, having an incline of one foot in ten, it broke up two roods, sixteen perches per hour, at a depth of about six inches," that is exactly three-fifths of an acre per hour.

**DESCRIPTION OF FAWKES' AMERICAN STEAM PLOW.**—The body of the engine consists of one horizontal, quadrangular frame of iron, about twelve feet long by eight wide, which rests upon the axles of a roller. This roller, which is six feet in diameter, and six feet long, is the driving wheel of the engine. In front of the roller, and bolted within the frame, is the boiler, which is upright, surmounted by a dome and pipe, and so constructed that steam may be got up in fifteen minutes. Thirty



minutes, however, are usually required. Over and behind the driving roller is the water tank, which is of the entire width of the engine frame, contains twelve barrels, sufficient to supply the boiler for five hours, and is so situated that when it and the boiler are full, they counterbalance each other upon the roller. Attached to the frame in front of the boiler, and tapering forward and slightly upward, like the bow of a boat, is a sheet-iron receptacle for coal. Here is also a seat for the fireman, the whole bow resting on two guide wheels of fifteen inches tread, and four feet diameter. Bolted to the under side of the frame, as frequently seen in locomotives, and on each side of the upright boiler, are the cylinders, each nine inch diameter, and fifteen inch stroke, the piston rods of which are so geared to the crank of the roller that it revolves once for every six strokes of the piston. Great regularity of motion, increase of motive power, and control over movement of the engine backwards and forwards, are secured by this arrangement; while the guide wheels, which may be turned at pleasure, by a steering wheel in charge of the engineer, almost at right angles, under the bow of the machine, permit it to turn in a circle, the radius of which is equal to the length of the engine, eighteen feet. By a small independent "donkey engine," which is placed between the tank and the boiler, the latter may be filled from the former, or the tank itself be, through a hose supplied from a well or brook. Into the beams, projecting from the rear of the engine, pulleys are let, over which chains pass, whereby a gang of eight fourteen inch prairie plows is suspended; a wheel on the beam of each plow regulates, as usual, the depth of the furrow, and the whole gang may be raised or lowered by a lever within the reach of the fireman, who, with the engineer, constitute the entire force needed to work the engine and plows.

The machine was tested on timothy sod which had not been plowed for seven years. At a given signal from the whistle, the firemen lowered the plows to the ground, which, having entered, they were drawn forward up an incline of about seven degrees. They were lifted promptly at the margin of the land, appropriated to the trial, the machine turning easily; again they were lowered and the plowing resumed, in as short a time as could have been done with a single plow and a pair of horses. The mean rate of speed was four miles an hour, and the united furrows were nine feet four inches wide; a strip four miles long, nine feet four inches wide, equals 197,120 square feet, which divided by the number of feet in an acre, gives almost exactly four and three-tenth acres per hour.

Allowing for the time lost in turning, and all other necessary delays, the engine proved itself fully capable of plowing thirty acres a day. The amount of fuel required being, according to the engineer, a half ton of coal, or the equivalent in wood. The plow was run over gullies and abrupt elevations, and stood every test in the most satisfactory manner. Its performance proved its perfect adaptedness to prairie cultivation and to the tillage of large fields. By a very simple arrangement, the roller, which is composed of wooden staves bolted to open iron heads, may be lifted from the ground, geared, directly to the piston rod. It thus becomes a rapidly revolving drum, over which a band is passed, and the whole converted into a farm engine.

for driving saws, thrashing machines, sugar and grain mills, etc. This ready conversion of a plowing locomotive into a farm engine, multiplies vastly the uses of the machine.

To conclude: The American machine will easily and regularly plow three acres an hour, with the aid of two men. Fowler's English prize machine may be made to plow three-fifths of an acre an hour, with the attendance of five men and a boy. That is to say, Fawkes, with two men, will plow five acres in the same time that Fowler, with five men and a boy, will plow one. That this is the "most economical" of English machines is attested by the highest authority; but we guess that an American farmer would place a plow and a pair of horses each, in the hands of "five men and a boy," and beat Mr. Fowler long before sunset. Let, then, the record stand, that at the present time the only *economical and practical application* of steam to tillage, is of American invention.

## PROFITS OF THE HONEY BEE.

HAVING long studied the most efficient means of increasing and saving our bees, of keeping out the moth, and of removing a share of the honey in frames, without disturbing its legitimate owners; and having succeeded beyond my expectations, in these necessary objects, I am anxious that others should be put in possession of my method, and its results; for no branch of rural economy yields so great a return of actual profit and of rational amusement as the cultivation of bees. How surprising, then, that so little is done towards its improvement. There is an unwillingness in many of our farmers to step out of the track they have so long followed. They say bees now require too much trouble; if they could be kept as easily, and do as well in their old sycamore gum, or box hive, as they were wont in the early settling of the country, there would be some satisfaction in keeping them. Yet these very men, who look on bee-tending, the planting and cultivating of orchards, and the care of poultry, as hard and troublesome work, will toil all summer without a complaint, to raise a crop of corn, which will yield them a comparatively trifling remuneration. They acknowledge stock-raising to be the most profitable branch of agriculture, and envy those who have the means of going into it. Yet here is a stock for which they have unlimited right of pasturage, that they may turn out to range at will, without danger to their being taken up as strays, or complained of as breachy, and which requires no exorbitant outlay of capital to commence the business, and certainly is sufficiently neglected to leave room for competition. There is more to be feared in the raising of Durhams and Suffolks. In short, nothing is wanting but good pasture, good hives, cleanliness and attention, to insure a rich reward to those who engage in the pursuit.

As to the profit derived from bees, it is enormous. Let me give you my experience. On the 25th of April, 1858, I purchased ten hives of bees, in the old fash-

ioned box-hive, for fifty dollars. They were so full that I had to divide them, before I could move them. I divided the ten and made twenty hives. On the 13th day after, I divided them again. I took four queens from one hive, in the cells, and ten from another, and gave each swarm a queen in the cell, which hatched the next day, making thirty hives. I sold, from these thirty hives, five hundred and forty-seven dollars worth of honey, and the increase of my bees is worth five hundred dollars more, making \$1,047 in one year, from an outlay of fifty dollars. I took from one hive twelve frames filled with honey, in fourteen days, which sold for twelve dollars; and I had a number of hives from which I took twelve frames, filled with honey, in twenty-one days.

I will relate an anecdote of a good old bishop: In paying his annual visit to his clergy, he was very much afflicted by the representations they made of their extreme poverty, and which the appearance of their houses and families corroborated. Whilst he was deploring the state of things which had reduced them to this sad condition, he arrived at the house of a curate, who living among a poorer set of parishioners than any he had yet visited, would, he feared, be in a still more woful plight than the others. Contrary, however, to his expectations, he found appearances very much improved. Everything about the house wore the aspect of comfort and plenty. The good bishop was amazed. "How is this, my friend?" said he; "you are the first man that I have met with a cheerful face and a plentiful board. Have you any income independent of your cure?" "Yes, sir," said the clergyman, "I have; my family would starve on the pittance I receive from the poor people I instruct. Come with me into the garden, and I will show you the stock that yields me an excellent interest." On going to the garden, he showed the bishop a range of bee-hives. "There is the bank from which I draw an annual dividend; and it never stops payment." Ever after that memorable visit, when any of his clergymen complained to the bishop of poverty, he would say to them "keep bees! keep bees!" and I shall bid my readers adieu with the same advice.—EDWARD TOWNLEY, in *Ohio Farmer*.

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Why is it that more of the dwellers in our cities, mountain-towns and mining-camps, are not bee-keepers? The best California honey, in the comb, brings readily one dollar a pound; and in no other country are bees as profitable as in California. It is nothing unusual to obtain from five to eight hives from one, in a single season, by the use of the Langstroth or Harbison hive, and in no other country is there such a diversity of excellent food for bees as here. We have never yet heard of a single instance of ill success in the keeping of bees in any part of this state or Oregon, where anything like ordinary care was bestowed upon their culture. It is not so difficult a matter to manage them as the uninitiated suppose. Any one, with a half hour's explanation, from an experienced apiarist, can obtain all the information necessary to the successful management of bees. True, there is always something to learn, and it is not to be supposed that a man of no practical experience, will, in all things pertaining to successful bee management, be as skillful at first, as he who has



made it his study ; but what we want to impress upon our readers is, that there is nothing difficult—no mystery in the successful management of honey bees, and that no farm stock pays larger dividends.

### WHEAT SOWING—CONDITIONS OF SOIL.

WE are not unfrequently reminded in the columns of a six year old cotemporary, that we are recommending innovations upon established usages in agriculture ; that we are eccentric, going quite away from the usual track as marked out by the most scientific among the agriculturists of other countries. We put in no denial of the “soft impeachment,” because we are doing nothing more than the circumstances of soil and climate will warrant. The immigrant farmer newly arrived, finds, in a land already famous abroad for its yield of wheat per acre, that as late as the first of November or even December, hardly an acre of wheat sown ; and with earnest inquiry he asks : “When do you sow wheat?” Now why this inquiry, if it be not true that we are practicing an innovation upon the usage of other lands as regards the proper reason for sowing wheat?

In the Atlantic States, by far the larger proportion of wheat seeding is done during the months of September and October ; whilst here, hardly an acre is seen, and by very many of our most successful growers, January and February are deemed soon enough. Now here is an innovation ; but are we not warranted in making it ? Our cotemporary would “follow nature ;” nature would sow her wheat in California at the time of ripening in June or July, we would not. There are in California, at this season of the year, just two important conditions pertaining to soils intended for wheat ; those that can be plowed at any time previous to the autumn rains, and those which cannot—and these conditions, to a great extent, must govern the season of sowing.

Prominent among the soils that can be plowed at any time, are our river and valley alluviums, some portions of which are always sufficiently moist for the purpose. It might be inferred from this, that there would be nothing in the way of the early seeding of such soils to wheat ; nor would there be, only that we find even in such soils, certain other conditions that may materially affect the result ; for among such soils are those that, on being plowed, are sufficiently moist for the immediate germination of the seed if sown, as well as those that are not.

We now find ourselves with four conditions of soils, as applicable to lands to be devoted to wheat. Soils that can be plowed, and those that cannot, till softened by the autumn rains, and those that can vegetate their seed if sown, and those that cannot. These soils, owing to their varied conditions, may require very different modes of working to bring out their productive powers to the best advantage. In order first to settle upon a proper system of culture, it is necessary to determine what are the best conditions of soils when prepared to receive the seed. With very many who

would claim to be ranked among our best culturists, the simple rendering of the soil light and friable by repeated plowings and harrowings, and to a considerable depth, seems to be all that is desirable. We take an entirely different view of the matter, because we believe that land can be made, particularly in California, entirely too light and porous, and to too great a depth for wheat.

A year ago or more we made the same assertion, and were hissed at; but now we find our views seconded by some of the ablest conducted agricultural journals in the world; and it is with no small degree of pleasure that we are able to lay the facts before our readers. A writer in the *Country Gentleman* remarks:

"Much has been repeatedly said of the best time to sow fall wheat; but important though the element of time undoubtedly is, the state and texture of the soil, as to the nutrition it can yield, and the mechanical support it will afford to the crop are at least equally entitled to consideration as essential conditions of success.

It is true that a "firm" soil is necessary, but by firmness is not meant a smooth surface such as made by using a heavy roller. In traveling several times over the vales of Eastham and of the Severn, in England, I never heard that the roller was used for fall wheat, when sown by itself; yet they there raise forty bushels per acre on a large scale, and frequently sixty in the vale of Eastham proper. If any soil, with considerable clay in its composition, should be exposed to heavy draining rains after being flattened by rolling, it would be in great danger of slating or caking, and afterwards baking, which checks the growth of wheat almost as injuriously as in the case of corn. On light blowing soils, rolling in the spring is essential to keep mold to the roots. It is also highly necessary for turnips and small seeds generally, because it makes the mold fine at the surface, where these minute plant germs germinate, the necessary moisture to enable them to do so rising from below, close up to the surface, in consequence of its fineness preventing drying by evaporation so deep down, as would be the case if the surface mold were more rough and coarse. Hence the importance of rolling high soil, and for fine seed, is indirectly due to the fact, that it causes the continued moisture to raise very near to the surface before it flies off in the form of vapor.

But, though the rolling smooths and compresses the immediate surface mold, it does not much effect soils at the depth of three or four inches, the depth it will be needed where firmness is most required by the roots of young wheat. In fact, in any case except clover or grass sod, "firmness" is not the term that gives a correct idea of the condition of soil most suitable to seeding fall wheat in. "A stale furrow for wheat," is the expression that will be heard by those who travel amongst experienced farmers on the best soils of England, the phrase implying the condition which we here comprehend by the term "settled." The latter implying as it does, time, as well as state or condition, seems the most correct and expressive, and I therefore adopt it.

A "settled" soil will have been plowed several weeks, say from three upwards, to have attained a settled texture. Though rough at the immediate surface when harrowed, a "settled" soil affords a compact root-hold, and retains moisture in sufficiency

for the demand and support of the young wheat. But unsettled or fresh plowed soil supplies no such mechanical support or solid soil for the roots to ramify in; no such amount of retained moisture for their use, and therefore no such examples of rapid growth in the early fall. Besides these disadvantages of newly plowed ground, there is the further and very telling fact, that a fresh turned soil is in a much worse condition at the *surface* as well as beneath it, in consequence, not only of its being unsettled, but because it has not had time for those reciprocal interchanges of particles and properties to take place, without which the mold is comparatively unfit to supply nutriment to the plant; and the latter must therefore make a halting and small, instead of a rapid and strong growth. But a soil that is "settled," from having been several weeks plowed, is not only prepared, by the incidental slaking and crumbling of its surface clod—the effect of rain, and the sun-drying or rending influence of repeatedly expanded moisture, and the necessary solution of many of its underground properties, by the atmosphere; but a stale furrow will have absorbed to the extent of its capacity, which is in proportion to the vegetable mold, so that the better the soil, the greater its power of absorption, and of retaining its fertility, a large amount of the fertilizing gas escaping from, or already liberated by ripening crops of grain and general vegetation. In fact, the absorptive and disinfective capacity of good soils when fresh plowed, is so great that I venture the opinion, that if regularly plowed *early* in the fall, instead of quite late or merely in the spring, such soils will remain in "good heart" or fertile, a third longer with the former than with the latter treatment, because thus they imbibe and supply the *same* plant food to successive animal crops with comparatively little waste.

Furthermore, when seeded in "settled" mold, wheat generally is sure to make a vigorous, large and healthy growth from being planted in such suitable condition. A plant of the grass family, it needs as much time to grow, grass like as is practicable, and like strong stocky grass, wheat that is forward, healthy and well rooted, can therefore resist the effects of frosts or drought, and the attacks of midge or weevil, with much better prospects of success than such as is late, spindling, weakly. Early plowing ensures a settled and an enriched soil, and the latter is the best known guarantee of a paying crop."

But—says the California wheat-grower—admitting this to be true as regards a firm or settled soil, the result of early plowing; of what avail is it to us, if we cannot plow at all? It is on this account that here, more than in the Atlantic states or England, we must be governed by certain conditions of soil and climate, that in those countries are hardly taken into account. We do insist that the observant wheat-grower, upon our adobe lands, is better qualified to speak of the proper time and mode of cultivating that peculiar soil, than he whose entire wheat field has ever been a river alluvium; and *vice versa*.

We have taken no little pains to obtain from wheat culturists, with soils widely different, the results of their modes of culture, what the practices they have adopted and would recommend. Upon river or valley alluvium or dry soil that can be plowed at this season of the year, if moist enough for the germination of seed, either of weeds



or wheat, it is better to plow immediately and only to a depth just sufficient to cover completely all the vegetable growth upon the land, as stubble, weeds or natural grasses, and no deeper; because, if moist enough to germinate seeds, then is it equally so—connected with solar heat—to cause the decomposition of all vegetable matter turned under, except seeds. Left in this state, the seeds of weeds soon vegetate, and any time thereafter the most desirable for securing the best crop, judging from the past, it should be once again plowed, with a light furrow and the seed sown and harrowed in.

California, however, comparatively has but a very limited quantity of such lands; a much larger portion consisting of soil that, while it admits of being plowed at any season of the year, is not sufficiently moist to cause the germination of seeds until after the first autumnal rains. To plow such lands with a view of promoting the decomposition of the vegetation it may bear upon its surface, is futile, because owing to its dryness, it would not decompose it, whether deeply covered or shallow. It is desirable to plow such soils as early as convenient, and to such a depth that the seeds of all weeds upon the surface cannot vegetate. Then, when the first rains shall have rendered the furrow compact or settled, and the few weeds near the surface shall have vegetated, scarify with cultivator or light gang plow and sow.

A last quality or condition of soils to be noticed, is that which is possessed by far the larger area of California wheat lands; these soils are either a hard tenacious earth mixed with gravel, or the real adobe, and either of them requiring a large quantity of rain, amounting to nearly complete saturation before the plow can penetrate them, and yet these are among the best, if not the best for wheat wherever the season will admit of the seed being timely and properly sown. To undertake to give the proper time to sow this description of soils would be useless other than to say just as soon as the rains and the season will admit; and, though adverse to the practice of theorists and not a few practical men, we would not have the adobe land plowed deeply, if we could have it done for nothing.

We advanced a similar remark a year ago and now make it again; it is easy to plow land too deep for wheat. In conversation with Mr. J. M. Horner, of Mission San Jose, a practical and successful wheat-grower, he remarked that he, as well as Mr. Blacow and others in his vicinity, had, to a considerable extent, abandoned deep plowing for wheat; because a lighter furrow invariably with them, produced the best crop.

The *Genesee Farmer* says: "Wheat likes a firm, compact soil; and if left somewhat rough and cloddy, it is none the worse. It is easy to make the surface too fine and smooth for wheat. The best English wheat-growers seldom plow deep for wheat. We have seen a crop of wheat that would average forty-nine bushels per acre, that was not plowed more than three inches deep. The method adopted is to plow deep for turnips once in four years; but not to plow deep either for wheat or barley. There may be exceptions to this, but this is the rule.

In regard to drilling, we do not think the advantages are so decided or so numerous as is generally claimed. A standard English author, and a practical farmer of

great experience, asserts that unless wheat is hoed there is little if any advantage in sowing it in drills. This may be so in England; but in this country, where we have not unfrequently very dry weather about the time wheat is sown, there is one advantage in drilling which should not be overlooked—it deposits the seed evenly and below the dry surface soil, and thus ensures immediate and more regular germination. There are no better wheat-growers in the United States than John Johnston and Robert S. Swan, of Seneca county, N. Y. Their farms adjoin; are both thoroughly underdrained. In 1856, a drought set in at the time of wheat sowing, in September. Mr. Swan sowed his wheat with a drill; Mr. Johnston broadcast. Mr. Swan's drilled wheat came up thickly and grew luxuriantly, while Mr. Johnston's was thin, and he found that 'none of the seed vegetated except that deepest in the ground;' and he is of the opinion that, had he sown with the drill, he would have gained, 'in all probability, five or six hundred bushels of wheat.' This, from such a man, is strong testimony in favor of drilling—when the soil is dry at the time of sowing.

The direct application of manure to wheat is not generally advisable in this country; it is apt to produce too much straw. It is better to manure preceding crops, or at least apply the manure so that it will be thoroughly decomposed and incorporated with the soil. Or perhaps we shall better convey our meaning by saying that it should be so applied that the soil will have time to *digest* it, to render it part and parcel of the soil itself. It may thus not only furnish proper food for the plants, but also aid in developing the elements lying latent in the soil. Summer-fallows and lime have probably this effect to a considerable extent.

John Johnston finds that a barrel of salt per acre has a decidedly good effect on wheat on his soil—increasing the growth and the early maturity of the crop. The good effect of the salt is probably owing to its increasing the solubility of the double silicate of alumina and ammonia in the soil; and, of course, the salt would have little effect on such poor soils as do not contain this or similar substances. It does not follow, therefore, that salt will in all cases be beneficial on wheat. But it can do no harm, and every farmer might readily test the matter for himself. Mr. J. sowed the salt at the time of seeding, but agrees with us in thinking that if sown earlier it would be better."

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### THE LAWTON BLACKBERRY.

**T**HIS plant is bearing extraordinary crops the present season, all over the country, the amount of fruit is really miraculous; on the old wood, with us, the fruit is so plentiful as to nearly hide the leaves, and the present season will decide whether a market is to be found at anything like the prices of former seasons; if so, it is one of the most profitable crops that can be raised. Its only fault is being sour before it is entirely ripe, and then it becomes one of the most delicious of fruits. The berry is black at least a week before it is edible; it then changes the character of its bloom and will leave its hold with the slightest touch of the finger: when the

berry requires to be pulled to separate it from the stalk, it is not fit to eat; but when it separates readily, it is certainly the best of berries.

Messrs. Drew & French have taught the New Yorkers the value of blackberries; the amount of their sales last year was immense, and we understand their arrangements for the present season are not less extensive. Blackberries have sold, at least of the cultivated kinds, at a higher price than strawberries. We think they are likely to maintain their reputation.

Whenever the price sinks below the price of strawberries, they may be made into wine with profit. The following is the best method: Fill a barrel of thirty gallons, half full, with the juice of the blackberry, add one hundred pounds of loaf sugar, fill the barrel with water, drive in the bung and roll the barrel until the sugar ceases to rattle; then place the cask in a cellar not subject to great variations of temperature; loosen the bung and fermentation will commence in five days or less; suffer the fermentation to go on without moving the barrel until the hissing noise, observable by listening at the bung, ceases; bung it up tight, and in eight months it is ready for bottling. Fruit wines should never be racked, for any accidental pulp will be precipitated after the fermentation has ceased. Wine is better when not racked into a clean barrel for a time before bottling.

Many medicinal virtues have been claimed for the blackberry, such as the cure of urinary calculi, etc. But we rather suppose that this is due to the sugar contained in blackberry jam, and not to the fruit.—*Working Farmer.*

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### WINTER IRRIGATION.

**N**EXT to a country like Egypt in which rain never falls, we would suppose that the agriculture of a country like California might be benefited by a judicious irrigation. That thousands of acres that now only produce annual or biennial grasses, that fully mature and dry up before the first of July, might, by a system of artificial flooding and the use of proper grasses, be kept in green pasture throughout the entire of summer, needs no argument to prove; because there are numerous practical demonstrations of its truth, on a small scale, in the various naturally irrigated spots, that here and there gladden with their living green, the otherwise parched and barren plains and hill-sides, during the entire of our rainless season.

It would seem as though nature had planted and watered her little patches here and there, for the very purpose of teaching us the first rude lesson; but if we are slow in anything touching the progress of our agriculture, it is in the application of the principles and practices of irrigation. There is a great deal more in it than many have been led, from a mere irreflective observation, to suppose. In speaking of the advantages of its application, but few have ever given a thought to the fact, that a mere summer irrigation of otherwise dry soils, is among the very least of the benefits to be derived. That summer irrigation of grass lands, orchards, vineyards and vegetable grounds, in many localities, will be the only condition in which they



can be successfully grown, admits of no doubt; because we have already numerous instances of its verification. But irrigation can play a far more important part, than just merely to furnish moisture for the drink of plants.

In conversation with J. M. Horner, Esq., of Mission San Jose, a short time since, the subject of irrigation was made the topic of discussion, and he remarked to us that but few seemed to know or appreciate the value of *winter irrigation*. From practical experiments and careful observation, he is convinced that it is the cheapest and most desirable method of perpetuating or increasing the fertility of soils favorably situated, that can possibly be derived. All are aware that the rich alluviums along our rivers are but the washings from the hills and mountains, brought down during flood season, and which, with us, is to a very great extent during the recurrence of our winters' rains. It is true that the turbid waters of our torrents are laden with the choicest of fertilizers, gathered from the surface washings of a thousand hills, they are hurried on their downward course, to add to the already excessive fertility of the alluviums of the valleys or to be lost in the depths of river, bay or ocean.

It is by husbanding these rich and valuable fertilizers and applying them to our lands by a system of ditches and canals that we shall be able to enrich, beyond what any other system can do, thousands of acres of lands, now comparatively valueless; whilst the perpetual fertility of yet other thousands can be as certainly secured. Winter irrigation can be applied to any description of soils to great advantage. It is the only irrigation that can properly be applied to lands devoted to the cereals, nor to such lands is the mere quality of fertilization, all the good that results from a winter irrigation.

It is well known, by the observant grain-grower, that for the last four years, not a sufficiency of rain has fallen, in very many localities, to amount to a complete saturation. Mr. Horner remarks, that it is the degree of saturation that determines the annual yield or productiveness of his grain fields; that invariably, in the spring, after the usual rains of the season are supposed to have ceased, he carefully examines his grounds by digging, to ascertain just the depth to which the surface waters have penetrated, and from this determines with singular accuracy, the length of time that the imbibed moisture will sustain the crop in its progress towards maturity; and he always finds the deeper the saturation, the better the crop. He has, in corroboration of this remark, found by actual experiment, that wherever the water from a mountain stream is turned upon grain lands in the autumn or winter, in addition to the rains of the season, that such lands invariably carry their crops further into summer, of course with a longer season for maturity and consequently a more abundant yield.

The subject, then, of winter irrigation, may well claim the attention of California agriculturists; for, apart from the fertility derived from the soluble salts contained in the turbid waters of our mountain streams, during their winter torrent time, and which alone are sufficient to keep all lands to which they can be applied in a state of perpetual productiveness, they also serve the purposes of saturation, which in itself is equivalent to a reservoir of water in the soil, for the use of the growing crops,

after the usual rains of the season are passed. Any one, to satisfy himself in regard to the fertilizing properties of the torrent waters of our streams, has but to construct a ditch at a suitable place, and turn on the water upon a single section of any particular field, and the result to the succeeding crop will completely satisfy, if it does not greatly astonish him. Every year, thousands of tons of the richest of fertilizers, are carried by the winter torrents from the surface soils of adjoining or distant hills and mountains, to be deposited as so much useless silt in the bottoms of our bays and rivers. Let ditches and canals be constructed at every available locality, to convey these waters and their precious burdens of wealth upon our soils that are now only waiting to drink them in, and we need have no fears of a deterioration of our lands, or a retrograde agriculture.

There are yet other advantages growing out of a judicious irrigation of lands, that will be made the subject of discussion in future numbers, notwithstanding the ridicule now so gratuitously awarded by a cotemporary, to all who look with the least favor upon irrigation.

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### DARK STABLES.

IT cannot be doubted that *light* exercises a very important influence upon animal as well as upon vegetable economy. Every one's feelings bear witness to the stimulus afforded by its agency; a dark day or a dark room induces lassitude and repose, which is quickly dissipated by the bright sunshine. Many diseases are much more virulent in shaded situations; and the eye especially cannot long retain its full power if deprived of light. From mistaken notions on this subject, or from false economy, it is a general practice to exclude light from the stables of horses and other animals. It is supposed by many that they thrive best in the dark. Where the animal is stabled for a brief period of rest, darkness will undoubtedly favor his repose. In the season when flies are troublesome it may also be well to darken the stable to exclude them; but when animals are stabled permanently in darkness, they cannot but suffer in various ways. The horse, especially, is very much subject to disease of the eye, and there can be but little doubt that this tendency is increased by confining him permanently where the eye, in waking hours, is strained to an unnatural position to perceive the objects around him. Horse *jockeys* find an advantage in the use of such stables. The animal being brought into the glare of day is confused and startled and by his high stepping and half-uncertain manner, impresses a novice with an idea of his spirit and action. Even if the quiet induced by darkness may favor increase of fat, it is not conducive to muscular strength. Muscles deprived of the stimulus of light, become flaccid, and the apparently high condition induced by this means is soon lost by active exertion. Men whose employments confine them to poorly lighted apartments soon lose the color and the energy of full health, and the same results follow similar treatment of animals.

Besides this, a dark stable will seldom be kept in that cleanly condition which favors full health. The "corners" will be neglected, especially if the care of animals be entrusted to the "help" who are usually content if the stable *looks* nice. When building stables, ample provisions for light will cost but little more than imperfect fixtures, and in the end will be found more profitable.—*American Agriculturist*

## SECOND GROWTH—SURFACE ROOTS.

AT every agricultural fair that we have visited this season, we have seen more or less specimens of second growth apples and pears. They are exhibited as curiosities rather than anything valuable, either as fruit specimens or as showing the habit of the tree. No one will pretend to say that the habit is at all desirable; on the contrary, it cannot but prove injurious to any tree in a climate that will not admit of their full perfection. To have the fruit buds that nature had intended to produce the next year's crop, prematurely brought forward only to be half perfected must prove injurious to the succeeding crop if not to the natural health and thrift of the tree. It is nothing unusual to find this second growth fruit in orchards where the trees are forced to the production of surface roots, while yet but nursery trees. In every instance that has come to our knowledge of a tendency to second growth, either of wood or fruit, it has been where surface roots, instead of deeply running roots, had been encouraged. We might instance the trees from Shell Mound nurseries, where "particular pains is taken to encourage a growth of surface roots." Very many of these trees are liable to this faulty habit. Specimens of second growth from that locality are not unusual, and we have seen them of large size, though in no wise to be compared with the regular crop.

The reason why trees with which particular care is taken to grow surface roots, are more exposed to the evil alluded to is this: The roots, instead of being encouraged to run deeply into the soil, away from all the sudden changes incident to climatic influences, are made to expand in every direction from the body of the tree, as near the surface of the soil as possible. The consequence is, that every sudden extreme of heat and cold upon the surface of the soil, is at once felt by the roots, and always injuriously. During the ordinary season of the summer's growth, in which trees are making their regular progress, let but a week of cold dry weather occur and the growth of the tree and its fruit receives a sudden check, always injuriously, and sometimes amounting to a complete suspension of the wood growth perhaps for the entire season.

Now let this season of stagnation, the consequence of cold, be followed by another of moisture—from dews or fogs—and warmth, the surface roots at once feeling the influence, the tree is forced into a new growth of wood, and the expansion of the fruit buds, which but for the condition of the roots of the tree and their liability to sudden changes from surface influences, would have remained dormant till the proper season of growth. In no case where deeply running roots are encouraged, or where trees have been propagated from the seed, in the positions they are permitted permanently to occupy, have we ever yet known an instance of second growth fruit; and simply because the roots of such trees are for the greater part below the direct influence of sudden though temporary changes of the temperature of the surface soil. To remedy the evil effects of this habit in trees, buy small ones, with their roots as entire as possible, and avoid those which have only horizontal roots; whilst the most effectual mode is to grow the tree from the seed where it is intended to remain.



### ABOUT FERTILIZERS.

*Editor Culturist*:—I have been a practical farmer for the last thirty years, and during that period, or previous to my arrival in California, I have never supposed for a moment that I lacked the necessary ingredient for keeping my farm in perpetual fertility so long as I had access to, and could easily procure any quantity I desired of a coarse bog-meadow grass, growing in the vicinity, and which only required the labor and cost of cutting and securing. During the winter season, I kept a perfect bedding for my animals, in every yard and stable, of this coarse grass, partly to absorb every portion of liquid manure that might otherwise escape, but particularly to add to the gross product of manure by its own bulk and weight of material. In this way I found it easy to make, annually, a large quantity of very valuable manure, which applied to my hoed crops, once in a rotation of four years, was amply sufficient to keep my land continually in heart. In fact, my mode of farming I had made a system, to that extent, that I could determine with sufficient accuracy my probable result for the year, by the quantity of my spring manures.

But, sir, in California, I find all my former experience and systems of farm culture "knocked endwise." Here there is no necessity of yarding or stabling my animals for four or five months, during any part of the year, for they do well enough upon the open field. Of course but little yard or stable manure is made, wholly inadequate to the necessities of a culture of my lands without impoverishment. What can I do? I have plowed in my stubble and all the straw of the farm not actually eaten by animals—for I sell none to leave the farm. The straw, however, thus turned in, unmixed with animal manure, defies the process of decomposition, and actually remains buried in the soil almost unchanged, not for a year only, but for years. And so far from being a direct benefit as a fertilizer, it is, in many instances a clear and positive injury, rendering the soil unnaturally porous and dry.

We have not sufficient inherent moisture in our grain lands, after the crop is removed, to cause the decomposition of the stubble or straw, if returned to the land direct from the thresher and plowed in, even though the soil will admit of being plowed. What, then, are we to do for fertilizers? Our lands are becoming exhausted from year to year, more rapidly than in almost any other country; and for the reason that we are occupying a country with a soil and climate in which vegetable matter seems never to decay.

AMONG THE FOOT-HILLS.

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OUR VIEWS OF FERTILIZATION.—That our soils are being rapidly impoverished by repeated croppings with cereals, we have every evidence; and, though most writers upon the subject seem inclined to attribute their deterioration and their annually lessened product to improper cultivation, denominating it the "skinning system" based upon shallow plowing or a superficial cultivation, we are inclined to attribute the difficulty to a different cause. If a system of shallow plowing alone has deteriorated our soils, then are they injured only to the depth to which they have been

plowed? and it is only necessary to plow deeper once more to regain our former yields. But repeated trials are everywhere proving that even a double depth of furrow will but slightly increase the yield of any of the cereals upon lands in California that have been for six or eight years under cultivation.

We must look, then, to other causes than shallow plowing, or a superficial cultivation to account for the rapid exhaustion of our soils of their wheat-producing constituents. We believe our correspondent, *AMONG THE FOOT-HILLS*, has arrived at the real cause of the deterioration, a loss of the humus or vegetable constituents of the soil, but seems at a loss for a remedy, as he finds vegetable matter, either in or upon the soil, slow to decay. That concentrated animal or mineral manures, as the phosphates, guano, etc., can be used with direct benefit to the immediate crop admits of no doubt, but whether at a cost that will warrant their general application to our rapidly increasing acres of deteriorated lands is not so certain.

There is one fact, however, connected with the renewal of the exhausted humus of our soils that is not sufficiently considered. If we cannot restore it by the direct application of animal manures, because not possessing them in sufficient quantities, we can do it by the use of green crops. Experiments, upon a small scale, have clearly demonstrated that, however reluctant or slow, all fully matured and dried vegetable fiber may be to decompose and admix with our soils, green crops are just the reverse of this; for turn under any quantity, from the least to the most that the soil can be made to produce, at the very and only season in which it is green, and immediate decomposition is the result; the juice of the green plant, aided by the heat and moisture of the season, being amply sufficient to accomplish it. Let every green and succulent crop that the soil can be made to produce, be plowed under in the month of May, and the most perfect decomposition as well as divisibility of the same is secured, and greatly to the increased fertilization of the soil.

There is a reason why such green crops plowed in are of peculiar value upon all alkaline soils; the acids they contain help to neutralize the otherwise injurious effects of the alkalies in all soils that contain them. The question, then, as to the relative value of the different kinds of green crops for the purposes of fertilization, becomes of the utmost importance. In all countries where the practice has become a part of the routine of scientific culture, it has been the practice to employ such products as were best suited, by their habit of growth, to produce an exuberant crop at the season in which it was desired to turn it under. Clover and buckwheat have both been extensively used, and each has its advocates, depending upon the system to be pursued. If only bulk of product is the object sought, buckwheat is the favorite of many; but where it is intended to feed off the product to some extent to stock before the plowing, clover takes precedence. In either case, the season of plowing was generally deferred till autumn.

There must be a different practice here; a crop must be employed that will produce a full yield, and yet in season to be turned under before it shall have commenced to dry from approaching maturity, and before the rains of spring or early summer shall have entirely ceased. The kind of product, then, the best for use,

must depend very much upon the nature of the soil and the season, as well as locality; and it can be left to the judgment of the culturist, who can best determine the most available product, from observation of the growth of plants and grasses, of his own particular locality.

In England it has long been a favorite practice to seed to turnips, and feed them upon the land and thus enrich it by the manure from the stock. This is undoubtedly an excellent mode, where the climate and soil will admit of a growth of turnips in midsummer; but it becomes inapplicable here, because the greater part of our wheat lands are too dry at that season for vegetating any description of seed. But recent experiments both in England and the Atlantic states show, that a much greater benefit can be derived from a crop of turnips or beets, as a fertilizer of the soil, by plowing the entire product under, than by feeding the same to stock. It remains, therefore, to be known whether we have not some kind of succulent vegetable of rapid growth, that might be produced in early spring, that would be an admirable fertilizer, because easier of decomposition than the more woody or fibrous stalks or haulm of grains or grasses. But as a fertilizer that can be made available to any extent upon our broad acres devoted to the cereals, we must rely upon some description of green crop, to take the place of the naked fallow, and thus supply the necessary aliment to the wheat crop, which we are unable to do in any other description of fertilizer.

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### TREE PLANTING.

**Q**UESTIONS are continually being asked in relation to the best mode of planting pear and other kind of trees. We would answer in relation to all trees, that the hole made in the ground to receive them, should bear no relation to the size of the tree at the time of putting it out, but the anticipated size after a few years of growth should rather be the guide for the opening into which it is to be placed. Our practice with the smallest pear tree, is to dig the holes three feet deep and four feet in diameter, placing the surface soil taken from the hole on the left side, and the subsoil on the right. When the hole is perfected, with an ordinary fourteen-inch auger, such as is used in putting out telegraph posts, bore a hole four feet deep in the bottom of this tree hole. This enters the soil readily, and will pass down freely to that distance, then turn it backward, leaving the disintegrated soil in the hole, and thus insuring a partial draining of the space above. Fill the hole up entirely with surface soil, first throwing the soil on the left of the hole, next peeling off the surface soil from that tree to the next, and filling the opening with it. The subsoil removed from the hole may replace this surface soil, and by the combined effect of sun and air it will be operated upon so as to form good soil at some future time. While this is being done under the operation of nature's laws, the tree, planted in the kind of opening we have described, is surrounded by a mass of pabulum capable of sustaining it for many years. Its free condition causes this cistern to be capable of receiving readily the fertilizing gases from the atmosphere, and affords an easy



entrance to the dews. The roots of a tree so planted will penetrate the whole mass of the surface soil to the depth of four feet, while the tap-root,\* in the time of drought, would pass down into the opening made by the auger to secure moisture. Provided in the boring of this hole water should rise, it is a clear indication that under-draining is positively necessary before success can occur, in the growing of pears at least; indeed, this is true of all trees. With the pear, the requirements are phosphates and potash, and these may be freely used.

The letter of L. Berkman, published some time ago in the *Working Farmer*, settles this question permanently. He had imported a number of trees from Europe, which, after a long voyage, gave indications of being injured. Those to which were applied nitrogenized phosphates were recovered and grew finely; while those with which it was omitted did not succeed. This style of planting may seem troublesome to those who have adopted the more careless method; but they should remember that it secures continued success; and we attribute our success in pears—for we have never failed with any one kind, or any one tree—chiefly to the thorough manner in which we have put them out in place. Even a currant, or gooseberry bush, or raspberry, or a blackberry, will pay well in its continued success, for such treatment as we have suggested for the pear.

In our neighborhood the grape does not succeed well; but we have a vineyard in which every vine had prepared for it such a hole as we have suggested for the pears, and these holes were filled with surface soil. The denuded portions between the vines, on which the subsoil was placed, at first had a sorry appearance with the red kellis on top, but the effect of sun and air has reduced this red kellis to a soil now equal in every respect to the original surface soil of which it was denuded. The grape vines have succeeded well. Any special manuring can be added to this system of surface soil surrounding them, and from the superior properties of the soil within it to retain all volatile matters, we need not fear its dissemination beyond the roots. A soil once thoroughly disturbed requires but a continued disturbance at its immediate surface, to be always in high tilth; and the soil, when shaken loosely into these holes, is in this condition, consequently it is not the affair of a day, nor does it require repeating each year, but when properly performed, it is performed in degree for all time. All this cannot be done in a soil requiring under-draining, for you will merely make a succession of cesspools, a succession of receptacles for all the redundant water of the soil. But in well drained soils, or those not requiring under-draining—of which there are but few—a tree, vine, or plant, so placed, can never suffer from drought, while excessive quantities of water are never present to derange the configuration of that part of the vegetable organism which always fails when immersed in excessive quantities of water.

Why is it that plants grow better in pots in green houses, if the pots be of sufficient size, than by out-door culture? Is it not because the soil within the pot is thoroughly aerated by its division before being placed there; by being thoroughly drained

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\*The value of the tap-root is beginning to be appreciated.—ED. CULTURIST.

of redundant water, and by being supplied with that quantity which creates the necessary degree of humidity? Is not every hole, dug in the way we have suggested and filled with surface soil, precisely analagous in condition to the earthen pot filled with loose soil? The same truths are equally applicable to all trees. Even forest trees, evergreens, and the whole line of deciduous trees, will pay well for the pains-taking we have suggested.

The same reasons that cause deeply plowed and well subsoiled lands to produce better crops of cereals, will cause trees properly planted to produce larger amounts of fruit. It is but a full-length portrait of that which a spear of grass, with deep plowing, represents in miniature.

PROFESSOR J. J. MAPES.

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### BONE MANURE.

IT is already clearly apparent that we can never maintain the fertility of California soils, by the mere application of barn-yard manure. We must resort to green crops and such other fertilizers as can be procured in sufficient quantities and at a reasonable cost. Among the most available and efficacious, in the Atlantic states and Europe, we find bone manure and guano; and, though both of these are transported great distances at corresponding cost, their value seems to be annually increasing, and there is not a doubt but that the bone business might be made one of profit here, as well as conduce largely to the interests of California agriculture. We subjoin an excellent article on the subject of bone manure, from the first number of a new agricultural journal, the *Farmer and Gardener*, Philadelphia.

The important position occupied by the United States, in an agricultural point of view, demands at the hands of our farmers, closer attention to any and everything, calculated to advance their profession, than as a general thing, they have hitherto been able to bestow. As a class, our farmers are careful enough in some directions; but very neglectful of their best interests in others. This characteristic was brought forcibly to my mind, some time since, while standing on a shipping wharf in one of our large cities. A vessel was loading with bones, and upon inquiry of the captain, I ascertained that they were to be shipped to England. The question which naturally presented itself to my mind was, "have we no use for these bones here, that they are being shipped to England? or are they so much more valuable to the English than to the American farmer, that the farmer can afford to pay, in addition to our regular prices, the cost of shipment, three thousand miles across the Atlantic?" Leaving your readers to determine this point at their leisure, I propose offering a plain remark or two, in relation to the value of bones as a manure.

The English and Scotch farmers have for many years regarded bones as one of the first, if not the very first manure in point of importance. They use them in a great variety of forms, and in the growing of some of their crops (turnips especially) consider them indispensable. Some idea of the extent to which they are

used, may be gleaned from the following facts: Almost every seaport of any consequence on the eastern coast of Great Britain, has one or more mills for the crushing of bones into a condition to be used for manure. The town of Hull stands foremost in the list, having it is said, not fewer than from thirty to forty vessels, in the docks at one time freighted with bones. In 1835, the quantity imported into Hull alone, was twenty-five thousand seven hundred tons. In 1837, the value of the bones imported into England, was £254,600, equal to a million and a quarter of dollars. Since that time the importations have been doubled. I have no means of knowing what quantity of bones has been imported into the United States, but I dare affirm, that it is not one-tenth the quantity named above. Why? Why should we not import bones? or at least, why should we not prevent their exportation?

So far as permanency is concerned, my own impressions are, that bones stand without a rival. They are, to be sure, not adapted to every kind of soil, but still may be regarded as susceptible of general use. Some farmers allow six years as the period during which bones will act favorably on pasture lands; on grass lands, successively mown, four years; and the same length of time on arable land. Others again, give them still longer periods, but all agree that, as a permanent fertilizer, they commend themselves to the earnest attention of every farmer whose supply of farm-yard manure is not equal to the requirements of his land.

I am not able to speak learnedly from my own chemical knowledge, of the mode in which bone manure operates upon the soil and plants; but, from a most excellent treatise on the subject, I learn the following: The principal element in the manurial action of bones, is the phosphate of lime. This salt is scarce in soils, sparingly dispersed, and speedily exhausted; and yet it is indispensable to the vigorous growth of nearly all cultivated plants, and forms the principal stimulant to the vitality and power of several. Dr. Thompson asserts it to be a constant ingredient in the inorganic or ashy part of not a few of the most valuable. According to the most eminent chemists, 39.3 per cent. of phosphate of lime is found in the ashes of the grain of oats, 44.05 in wheat, 32.5 in barley, 6.2 in the ashes of the straw of wheat, etc. These larger proportions show how indispensable the phosphate of lime is to the health and growth of nearly all our most useful plants; and consequently, how pervading an influence is exerted upon them by bone manure. It is asserted that turnips, potatoes and white clover, are so powerfully affected by the presence of phosphate of lime in the soil, as to be mainly dependent upon it for their luxuriance and vigor.

Another of the values of the bone manure, especially when applied in a crushed condition, is their extraordinary capacity for absorbing and retaining moisture. "It is frequently observed that when any vigorous plant upon a boned field is pulled up, it will bring up some small pieces of bones with its roots; and when minutely examined, it will be seen to have grasped the little pieces and pervaded their cavities with its radical fibers, while these cavities will be seen to be clammy, or even copious with the liquid nourishment on which the spongioles were feeding. The very contact which the radical fibers of young turnips obtain with bone manure, and which they cannot, with any of the ordinary methods of application of farm-yard



dung, has been assigned by some farmers, as the reason of the paramount power of bones over the turnip crop."

But I have already extended this article beyond my intended limit. I am aware that farmers, as a general thing, do not like lengthy dissertations. Breaking off abruptly, therefore, I may, if this article is acceptable, present a few more arguments in favor of the use of bone manure in our country.

Yours,

8th mo. 2d, 1859.

A. T. B.

### SYSTEMATIC FARM ACCOUNTS.

*Mr. Editor:*—Perhaps a few remarks upon a subject which, as a general thing has not occupied a very prominent place in agricultural journals, will not be inadmissible. I refer to systematic farm accounts.

It is a conceded point, that in no one of the great leading operations of the day, is there so little system as in farming. Were the merchant and manufacturer as inattentive to the details of their business, as farmers generally are, bankruptcy and ruin would almost inevitably follow. The true merchant keeps an accurate account of the minutest items of his business. His purchases and sales are carefully recorded. Every day's transactions have his specific and careful attention. Once a year, at least, and generally twice, he takes a careful inventory of his stock, squares his books, strikes his balance, and is thus enabled to approximate at least to a knowledge of whether his transactions have been profitable or otherwise. In reply to this we are told that fifty merchants fail, where one farmer proves bankrupt; and further, we are pointed to thousands of farmers, who, without the tedious process of taking account of stock, squaring books and striking balances once a year, have won their way to comparative independence. All this is undeniable, but still it does not overthrow my position. Admit that they have been thus successful, with their utter *want* of system; how much more successful *might* they have been, had they adopted it? Those who argue in favor of carelessness in this particular, look only to the *profitable* results, taking very good care not to estimate the losses which are suffered by negligence.

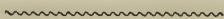
Ask the majority of farmers, on the first day of January, the result of the previous year's operations, and nine out of ten will tell you that they raised *about* so many bushels of wheat, rye and corn—that they made *about* so many pounds of butter and cheese—that they received *about* so many dollars and cents for it—that their expenses for the year were *about* the difference between their receipts and expenses. My good farmer friends do not be offended at my plain speaking. Tell me, can anything be more unsatisfactory than this? It may all turn out well; and farmers who work under this guessing system, may, and *do* frequently prosper; but the question is, might they not have done better, if the details of every operation in which they engaged had been carefully noted down—its cost and its profit or loss? I will make a still further admission. Suppose that in the end, systematic account-keeping proves

no more profitable than the guessing system. I submit it to every farmer's candid consideration whether the little extra trouble required, will not be repaid an hundred fold by the decided feeling of comfort connected with the fact that he is precisely aware of what has been attempted, what it has cost, and what has been accomplished?

It should be the pride of every farmer to know to a fraction, how much every transaction of the farm costs him. He should keep such an account of his daily transactions as will enable him at any time, to ascertain at a glance, how many quarts of seed he applied to each acre—how many bushels he gathered from it—what it cost to plow, harrow, seed and harvest every field on his premises—the precise day on which each of these operations were performed—the state of the weather—the condition of the soil, whether wet or dry, etc. He should note the number of laborers he employed during the year—the length of time they wrought for him, and the amount of wages paid them. The expenses incurred for implements, seeds, repairs, etc., should be carefully set down. These and many other items of apparently trifling, but of really immense importance, should be the object of his daily attention.

Now all this looks rather formidable, does it not? I confess it does, but it is more formidable in appearance than in reality. Let every farmer who reads this article, and who has not yet attempted anything of the kind, make a trial of it for a single month. A suitable book can be procured for a few shillings, and half an hour of each evening devoted to it, will be amply sufficient. If he is, as he should, be, careful and observant, he will find in that little memorandum-book, a source of not only genuine pleasure, but of actual profit. By a reference to it, at the end of a twelve month, he will be enabled in a considerable degree to regulate his operations by past experience. When asked to state how many bushels of wheat, rye or oats he raised, he will not be compelled to give the unsatisfactory reply, "*about so many*," but in a moment can state the product of each field, and of every animal on his farm.

I do not know, Mr. Editor, how these views will suit you or your readers. I have only to say, that experience has taught me that they are sound and correct. I will merely add, in conclusion, that if every farmer kept such a diary or systematic farm account, our agricultural papers would become two fold as valuable as they now are, from the simple fact, that the notes of actual observations made, could be much more readily communicated, than from mere memory, and farmers who now never think of writing for the papers, would take a pride and pleasure in doing so.—A. T. J., in *Farmer and Gardener*.



**DEATH TO THE BUGS.**—The following remedy is said to be infallible: Take two pounds of alum, bruise it, and reduce it nearly to powder; dissolve it in three quarts of boiling water, letting it remain in a warm place till the alum is dissolved. The alum water is to be applied hot, by means of a brush, to every joint and crevice. Brush the crevices in the floor of the skirting-board if they are suspected places; whitewash the ceiling, putting in plenty of alum, and there will be an end to their dropping from thence.

## DRONE PRODUCING QUEENS.

IN conversation with N. P. Simmons, apiarist, Sacramento, on the subject of bees and their remarkable fecundity in California, he remarked that there might be instances in which the keeper of bees would find himself disappointed in this regard; that, as an instance of this, he had one hive in which the queen had never produced any other than the eggs of drones, not a single working bee having been added to the swarm after its first institution as a colony. Now it is evident that, had this hive been purchased by some one but little acquainted with the habits of the bee, soon after its first establishment as a colony, it might have been kept indefinitely with no increase either of young queens or working bees, which is equivalent to no increase at all.

But a few days ago, after our interview with Mr. Simmons, Mr. Horace Gushee, a successful bee keeper, in this city, San Francisco, made the same remark: that he had a queen bee that was laying only drone producing eggs. He was led to examine, from noticing no increase of workers in his new colony as there should have been. Mr. Simmons had discovered, on examination, that his queen, though apparently healthy, was inferior in point of size and activity, to most queen bees. Mr. Gushee found, on experiment, that his queen, though apparently healthy, could not fly. Here we have the singular fact presented, of queens perfectly competent to the production of eggs that would produce drones, but not a single worker, and in both instances, undoubtedly from some defect or want of vigor in the queens; they could lay eggs sufficiently perfect for the production of drones, but not of workers or queens.

It has been asserted, by a few of the most learned and skillful apiarists, that the drone—which is the male bee—never has connection with the queen—the only egg producing bee in the hive—except when she is on the wing, and that she never leaves the hive except for this purpose, or in swarming. Do we not have something of a corroboration of this fact in these instances of drone producing queens? Neither of them could fly. When taken a short distance from the hive neither of them could make their way back by flight, of course could not rise in the air to be met by the male bee; and yet without connection with the drone or male, could produce eggs that would hatch perfect drones. Here is a singular fact in the physiological economy of the bee worthy of observation.

All are aware that hens, with no males among them, will produce fine looking eggs, but such eggs will neither produce males or chickens of any kind; whilst the female of bees, without the male, can produce perfect male eggs. It is evident, from this, that in the purchase of bees, the inexperienced should be capable of ascertaining, by inspection, as to the condition of the queen to produce workers as well as drones, or buy of such only as can warrant the perfect condition of the queen to work for the good of her country or colony. The natural history of the bee, in its various phases, is an exceedingly interesting study, and worthy the attention of even the most obtuse observer of animal or animate nature.



## NEW METHOD OF MULCHING SMALL FRUITS.

IF the soil of any country in the world can be benefited by the moistening influences of a good mulch, it is the soil of California, and a great deal has been said in support of its adoption in place of irrigation, where one or the other seems requisite to the perfect development of trees and their fruits. And so well satisfied are we of the value of mulching—though not to the exclusion of irrigation—that any improvement upon systems heretofore adopted to attain the object, will ever find in us a ready supporter. On looking over recent exchanges, we find an article in the *Farmer and Gardener*, by Wm. Bright, in which a new method is proposed for mulching; it being none other than to make the land grow its own mulch. We believe the plan is practicable, and therefore lay it before our readers for their consideration.

Small fruits, such as raspberries, grapes, gooseberries, currants, blackberries, etc., are much benefitted in garden-culture by “mulching,” or covering the space between the rows with coarse litter, straw, salt hay, tan, etc. The mulching not only keeps the soil moist, but it prevents the growth of weeds, and *shading the earth*, is in some mysterious way, almost equivalent to manuring, as it creates certain chemical changes to take place in the soil which cannot go on under the influence of light, in the absence of moisture. Now in market gardens it becomes rather a formidable and extensive job to mulch small fruits, by the acre, every year or two, and few cultivators, we presume, attempt it, especially in dry seasons. The raspberry can scarcely be raised in perfection without mulching; the gooseberry not at all. To mulch an acre of raspberry plants, will require at least ten tons of litter, worth, six miles from Philadelphia, five dollars per ton—sixty dollars.

I have, for some years, been studying how to perform this very desirable process of mulching in a cheap and efficient manner, and I think I have accomplished it very satisfactorily, by *growing the mulching material on the ground intended to be mulched*. The plant employed for the purpose is the southern field pea, or cow pea, a very strong growing leguminous plant, which will succeed on almost any soil, without manure, and in sixty to ninety days will produce as much vegetable matter upon an acre, as can be found in a clover sod two years old. This is the plant now so much employed as a renovator of sand and barren soils in Virginia, and other southern states. A crop of cow pea vine, turned under when green, is the best possible preparation, on exhausted soils, for wheat and corn. This pea I sow in rows between grapes, raspberries, and other small fruits, either broad cast or (preferable mode) in a wide drill, about as thick as you would for an ordinary crop of early peas. It starts in a few days, grows rapidly, keeps down the weeds, shades the ground perfectly while growing, and furnishes an ample mulching when cut down, while in blossom, thus producing, at a cost of three dollars for seed, and a little labor, a substitute for sixty dollars worth of litter, which would be required to accomplish the same object by mulching in the ordinary way.

The pea, it is well known, obtains its chief supplies of nutriment from the atmos-

phere, and draws very lightly upon the ammonia in the soil; or rather it will grow vigorously in a sandy, barren soil, almost destitute of carbon and ammonia—the two most valuable constituents of rich soils. The pea, however, demands lime or potash, which it no doubt finds in sand, but it is greatly improved (and so are all small fruits) by a supply of lime added to the soil.

By this method of mulching, I save buying or using of valuable litter. I shade the soil perfectly all summer, and I bring up from the subsoil, and extract from the atmosphere, by means of my peas, enough vegetable matter, (carbon) ammonia (nitrogen) and earthy salts (potash, soda and lime) to furnish a large part of the foliage, wood and fruit, of my next crop of fruit; thus making the peas perform the part, not only of a mulching substance, but a provider of food for my fruits.

If the reader will look at any analysis of the pea vine, he will find it richer in nitrogen, or ammonia, than any other straw; and yet it is a well known fact, that the pea, and especially the cow or field pea of the south, will grow in a poorer soil than any other plant, except weeds, moss or something of that sort. In this view of the pea, it becomes a constant renovator of the fruit garden, as well as a mulching substance, and as such I invite the attention of gardeners and amateurs to its great and peculiar merits.

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#### MANNER OF MILKING.

THE manner of milking has a more powerful and lasting influence on the productiveness of the cow than most farmers are aware of. That a slow and careless milker soon dries up the best cows, every practical farmer and dairyman knows. The first requisite of a good milker is, of course, the *utter cleanliness*. Without this the milk is unendurable. The udder should, therefore, be carefully cleaned before the milking commences. The milker may begin gradually and gently, but should steadily increase the rapidity of the operation till the udder is emptied, using a pail large enough to hold all, without the necessity of changing. Cows are very sensitive and the pail cannot be changed, nor can the milker stop or rise during the process of milking, without leading the cow more or less to withhold her milk. The utmost care should be taken to strip the last drop, and do it rapidly, and not in a slow and negligent manner, which is sure to have its effect on the yield of the cow. If any milk is left, it is re-absorbed into the system, or else becomes caked, and diminishes the tendency to secrete a full quantity afterwards. If gentle and mild treatment is observed and persevered in, the operation of milking appears to be one of pleasure to the animal, as it undoubtedly is; but if an opposite course is pursued—if, at every restless movement, caused, perhaps, by pressing a sore teat, the animal is harshly spoken to—she will be likely to learn to kick as a habit, and it will be difficult to overcome it afterwards. To induce quiet and readiness to give down the milk freely, it is better that the cow should be fed at milking time with cut food, or roots, placed within her easy reach. The same person should milk the same cow regularly, and not change from one to another, unless there is special reasons for it.

The foregoing, which we clip from an English agricultural journal, contains some truths worthy the consideration of American dairymen; but the recommendation to feed the cow at milking time with "cut food, or roots, placed within her easy reach," is all wrong. First, because in a dairy of a hundred or more cows, it is impracticable; and secondly, because cows cannot be eating anything placed before them without a considerable movement of the body, which is unfavorable to that quiet so indispensable during the milking process.

### ORNAMENTAL PLANTING.

WITH the constantly increasing love of rural life among our citizens, there does not appear to be a corresponding improvement in the modes of laying out and making attractive the surroundings of our country homes; and as long as the present guess-work and experimental systems or really no system at all, are in vogue, the heavy attendant expenses must continue to prevent many from adopting the tasteful elegancies of country life. Among the many admirable authorities on landscape gardening in Europe and this country, we learn what must be done to produce fine effects in ornamental planting—that curved roads and winding walks are beautiful, etc.; but we fail to find the "modus operandi," of executing even the primary arrangements of a country estate.

When nearly every man labors under the delusion that landscape gardening is instinctively comprehended, and if he cannot give it his attention, his head gardener, under the same impression, is prepared to do it for him—the details of landscape gardening will, when this instinctive knowledge is to be put in execution, be found desirable. Experience is a dear school, and if those who will persist in getting their education there, will only charge to that account the heavy additional amounts expended, we should have no further complaint of the enormous cost of beautifying country places.

If landscape gardening be a part of a gardener's business, we must elevate the standard of excellence in that calling, and have them educated as scientific men, qualified to bring to their aid the resources of at least half a dozen different professions; the cultivation of fruit, flowers and vegetables is one thing; and laying out, artistically planting, and arranging ornamental grounds is quite a different pursuit, requiring a different education, tastes, etc. In fact, gardening and landscape gardening bear no more resemblance to each other than house painting and painting landscape scenery; the first is highly practical, and the other belongs to the scientific and beautiful, and the line between the practical and the beautiful is where the gardener's operations should cease, and those of the rural artist commence.

Now we believe that landscape gardening is not so expensive as our experimental ruralists would have us believe, and we would wish to remove this frightful barrier that prevents men of moderate means from indulging in the luxury of a country house and country enjoyments.



Let him who proposes to make his home in the country, and to surround it with all that is attractive and beautiful, first study his subject well, ascertain as near as may be what he desires to accomplish, and then select a location whose natural advantages approach somewhat to his idea of perfection; the economy of this will be highly appreciated in the end; the natural surface should be adapted to the improvements which are designed to be made, and grading the surface should be studiously avoided, as it shows little or nothing compared with its cost. Either purchase naturally graded grounds to your liking, or by a judicious system of ornamenting and planting, make really more beautiful the undulating or irregular surface you possess.

The regular graduation of a fine approach or carriage drive through the premises is, however, at once showy and effective.

Before any improvements be made, a tree planted or cut, or a spade put in the ground, we must thoroughly understand the result. What is to be the effect of each and every change that is made? and what is to be the exact cost of it in dollars and cents? A problem that can be as easily solved as the multiplication table. The main thing is to begin right; therefore make or have a topographical map of your estate; let every natural and artificial feature be laid down to a scale precisely in the same place it occupies on the ground, and on this map you can plan and study every improvement that may be desirable. No matter how much time, trouble or money such a map may cost, it is cheap at any price, and conveys a thorough understanding that can be had in no other manner; it is equally valuable after your improvements are made, showing the locality and fall of all drains and underground works, facilitates the management, and is indispensable in keeping accounts with the various fields. You have your whole estate before you on the table, and you can as readily discuss the advantages and disadvantages of all improvements plotted on the map, as if they were executed on the ground; having finally decided upon their location, carry out the construction of them, and they become permanent; then there is no desire to alter, because no change can be made for the better.

It is a simple matter to say what should be done to produce the graceful and beautiful; on this point we have already abundant information, but how and where shall we commence and carry forward our improvements, is a subject we propose to follow up, and divest all the idea that landscape gardening is not to a moderate extent within the purse and the practical demonstration of the humblest occupant of our country homes.—*Country Gentleman*.

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TWO HEAPS OF COW MANURE.—The lesson inculcated by the following paragraph, from the pen of Hon. F. Holbrook, in the *N. Y. Farmer*, is one of great value to the thinking farmer. How true is the remark of Mr. Coke, late Earl of Leicester: "That the value of the farm-yard manure is in proportion to what it is made of. If the cattle eat straw alone, the dung is straw, the cattle are straw, the farm is straw, and the farmer is straw—they are all straw together."

"Not long ago I had four cows come up to the stable in the fall, which I thought

might yield a good supply of milk through the winter, if fed well. I also had four other animals, cows and heifers, which were not expected to give much milk till the following grass season. The first four were tied in the stable side by side, and received each, in addition to hay and stalks, four quarts of small potatoes each morning, and two quarts of corn and oatmeal each evening, through the winter. As was expected, they gave a good mess of milk, and came out well in the spring. The manure of these four cows was thrown out a stable window, under the cattle shed by itself. The other four animals were tied in the same stable, next to the first four, and received only hay and corn fodder. Their manure was thrown out by itself, at the next stable window, and under the same shed, so that the two heaps lay side by side. The heap made by the four cows that were daily messed with potatoes and meal, kept hot and smoking all winter, and was wholly free from frost. The heap made by the other animals that had only hay and stalks, showed no signs of fermentation, and was somewhat frozen. Observing this difference from time to time, curiosity prompted me in the spring to apply these two heaps of manure separately, but in equal quantities side by side, on a piece of corn ground. The superiority of the corn crop, where the manure from the messed cattle was applied, over that where the other heap was spread, was quite apparent and striking, and called my attention more particularly than it was ever before directed, to the importance of feeding out our best or richest products, if we would have the best kind of manure for our lands, and large crops from them."

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## ART, SCIENCE AND INVENTIONS.

**MOTIVE POWER—WATER WHEELS.**—The motive agents now in use were originally introduced as follows, viz.: man, animal, water, wind, steam. In addition to these, since the introduction of steam, there have been experimentally used, atmospheric air, the gases, and electricity or galvanism, with but little, if any, useful result.

The first water wheel was constructed in the most simple form, by merely attaching plain float boards to a vertical shaft, the end of which was fastened directly to one of the stones of the mill.

The undershot, breast, and overshot wheels were afterwards invented, and worked with more efficiency.

The undershot wheel was plain flat boards, against which the water shoots with great velocity, setting it in motion by the force of percussion. When the float-boards have half the velocity of the water, its maximum power is obtained, which theoretically, should be equal to the whole power of the water; but as the water leaves the wheel with half the velocity with which it strikes it, of course it retains half its momentum, so that, deducting this and allowing for friction, the power of the wheel is one-third or two-fifths the power of the water.

The breast wheel has buckets on its periphery, so constructed as to receive the water near its top, and retain it until it reaches near to the bottom.

This wheel, depending on the gravity of the water, rather than its velocity and force of percussion, needs to run much more slowly than the undershot, its maximum power requiring a velocity at the periphery, of only three or four feet per second.

The overshot wheel acts on the same principle as the breast, but as its name implies, the water shoots over into the buckets on the opposite side from the flume, causing it to revolve in an opposite direction to the latter.

The best breast and overshot wheels have a power of about seventy-five per cent. of the force of the water. As water-power became more generally used for manufacturing purposes, the enormous loss of the overshot, and the great bulk and slow motion of the breast and overshot wheels, called loudly for some device more compact than the latter, and more economical than the former. In response to this call, a Dr. Barker, of England, invented what was called "Barker's Mill," which was merely a hollow shaft with two hollow arms, having openings near their ends, opposite each other. The water in this machine is forced by its own pressure through the shaft and arms, and issues with great force through the openings, in jets, its reaction giving motion to the arms in the opposite direction. It was supposed that by giving to the extremities of the arms a velocity equal to the velocity of the water issuing from them, the water would be left in a state of rest, and consequently impart its entire power to the mill. This theory, in all devices for using the reaction of motors, is correct; but in Barker's mill the water lost a part of its power by being twice turned at right angles from its course, and the centrifugal force given it by the arms greatly increased its force, giving it an undue and objectionable velocity. These imperfections reduced its useful effect below that of the breast and overshot wheels.

This mill turned the attention of inventors to the principles of reaction, and, after much experimenting, Mr. James Whitelaw constructed a wheel giving the water a curved channel from its ingress to its egress, which in a great measure overcame the objections of Barker's mill, and gave an available power of seventy-four per cent. About the same time, M. Fourneyron, of France, conceived the idea of a union of the two principles of percussion and reaction, and so far accomplished it as to produce a wheel that combined the good qualities of both without their bad ones. Using enough of the percussion to require but half the velocity of the reaction, and enough of the reaction to save the power necessarily lost by direct percussion, the French turbin wheel gives more available power than has been acquired by any other device.

The action of this wheel is too intricate to describe without illustrations, but we will give a general idea of its construction and operation. The wheel runs horizontally, with a vertical shaft. It is divided near its circumference into curved channels, with smooth, thin metal partitions. At its center is a stationary trunk or cylinder, which may rise to the top of the head of water, and form a sort of flume.

In its operations the water is admitted into the stationary trunk, from the lower end of which it enters the channel of the wheel with great velocity, impinging against the inner end of the curved partitions in a direction varying sufficiently from a right angle, or radius, to it, to insure its passage round the curve and in close contact with it, until it reaches the periphery, where it is discharged in a tangent in the opposite



direction to the motion of the wheel. The motion of the water having been checked, first by its partial percussion when it entered the wheel, and then by its continued and almost infinite number of impacts against the curved partition, and but slightly reacting on it, owing to its motion in an opposite direction, loses its entire force, and the periphery of the wheel passes smoothly away from it, leaving it perfectly exhausted and very nearly in a state of rest.

To understand the philosophy of the construction of the turbine, requires a clear comprehension of some of the most abstruse and perplexing points in theoretical science.

Some years ago one of these wheels was put in operation at St. Blasier, in France, only thirteen inches in diameter, and one-fourth of an inch thick, making two thousand and two hundred revolutions per minute under a head of water of three hundred and fifty-four feet, which supplied power for a cotton mill of eight thousand spindles. Its useful effect was said to be from eighty to eighty-five per cent. of the theoretical water power.

Until 1753, the breast wheel was considered the best in use in this country, when Elwood Morris constructed two turbines, that were used near Philadelphia with power of seventy-five per cent.

In 1844, Mr. Uriah A. Boyden, of Massachusetts, designed a turbine, of seventy-five horse power, for the Appleton company, at Lowell, with a power of seventy-eight per cent. In 1846, Mr. B. constructed three turbines, of one hundred and ninety horse power each, for the same company. If they gave seventy-eight per cent. of the power of the water, he was to have \$1,200 for his services and patent, and four hundred dollars additional for every one per cent. over seventy-eight per cent. These wheels produced eighty-eight per cent. power, making the compensation \$5,200, instead of \$1,200, which was promptly paid by the company.

There are several kinds of cheaply constructed reaction and turbine wheels, which are effective; but as the performance of each depends on its philosophical construction, and a certain velocity depending upon the form of construction, and the head of water where it is to be used, no one should purchase, without either understanding its whole operation, or having entire confidence in the competency of the person furnishing it. One-half the power is often lost, either by a badly constructed wheel, or running a good one at the wrong velocity.

Water, to transfer its whole power to a wheel or other device, must, itself, be left in a state of rest. And the wheel, which most nearly effects this—other things being equal—gives the most available power.

We will recapitulate by naming the wheels now in use, and the principles on which they act, in the order of their effective power :

1. The turbine—percussion and reaction.
2. The breast and overshot—direct gravity.
3. Reaction—reaction.
4. Undershot—direct percussion.

SCIENCE IN AGRICULTURE.—There are two classes of farmers—those who strive to bring all the lights of science to bear upon their calling, and those who believe that there is no science in their calling. The latter class constitute the most stupid aspect of American society, and are civilized only by the influence of their more enlightened neighbors. The best way to christianize them is to lend them an agricultural paper. Repeat this operation for half a year and they will then begin to borrow. At the end of the year, press them hard to subscribe, and they will express a wish to have the paper, but then, “money is so scarce.” Offer to lend them the money and you have them; they will not only subscribe, but they will pay their own money.

Of all the industrial occupations, the farmer, who has grown up without studying the science of his business, but in the constant practice of it, is the hardest to reach with arguments of a “*better mode*.” But when the farmer once takes hold of science, and begins to improve and experiment, he is the most persevering progressionist in all the land. Indeed, with the farmer the whole difficulty is realized in the beginning; for, as improved modes naturally bring improved profits, each step brings with it new incentives to further advancement, and hence the farmer finds no place in which his interest does not spur him onward and invite him upward. And just here we perceive the true lead of political economy. If the Government, state or national, is disposed to augment, by appropriations of money, the happiness and well being of the people—if a little money is to be expended for the purpose of largely augmenting the national wealth, it cannot so well be done in any other way as by diffusing among the people, as free and plain as light, a knowledge of the sciences which pertain to those industrial pursuits which produce wealth.

Contemplating the subject in this light, what strong inducement have we to labor for the thorough education of the farmer in the science of agriculture. And if we reflect that all sciences begin in agriculture and end in agricultural products, how pusillanimous is the man who writes against agricultural colleges, and how hopelessly ignorant is he who cannot see the utility of agricultural experiments. It would be well for such men to think what our present civilization would have been, if Watt had never experimented on steam—if Franklin had not experimented on electricity—if Morse had not experimented on electro-telegraphing—if Daguerre had not felt his way through the dark, in his efforts to use light instead of the pencil in painting pictures—and if Fulton had never *tried* to see if, peradventure, he might make steam to drive a boat up the river.

And be it remembered that all these Patriarchs of our civilization moved onward in their respective spheres, undaunted by the ridicule of a wicked generation, who cried humbug! visionary! Away with your rational inferences, your mathematics, your chemistry, and your science; who wielded their whole influence against the improvement of human appliances for the augmentation of human happiness.

But the scale has changed, and much for the better. Without the higher appliances of civilization, brought by Watt and by Fulton, by Franklin and Morse, by Jenner and Jennings, by Daguerre and his followers, who does not feel that our civ-

ization would be savage? Let the farmer think what he would do without the reaper and the mower, the threshing machine and the horse power, and what his farm would be worth if there were no railroads nor steamboats. O, how contempt struggles within our bosom for supremacy over the pity which we feel for the man who can write against agricultural colleges, and burlesque the idea of "book learning." The unblushing impudence of such a man exceeds by far the audacity of "Burns' louse."

But a better day has dawned on Christendom, and old fogysm is now in the minority. That class of bipeds, which then pointed the finger of scorn at the apostles of progress, "is growing small by degrees, and beautifully less." Intelligence is actually growing popular, and the farmer has discovered that there is more science in *his* calling than in all other arts.

"If any man hath an ear to hear let him hear." The car of progress is going to move right forward, faster and faster, and if any man is so big a calf as to throw himself across the track, he has just as good a right to be run over as any of the bovine race, who always wait to be "clubbed off."—*Ind. Farmer.*

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### THE GRAIN HARVEST.

THE New York *Courier* commences a leader with the following: "The West is gorged with food, yet pines for means of life. She has just reaped a most magnificent harvest, and yet is without a spare dollar in her pocket. There is no end to her produce; nor any end, apparently, to her destitution. She is in the want of the very first of all civilized necessities. We don't mean bread, for the savage also needs that, but a *market*. She knows not where to send her wheat. Europe has enough of her own. The Middle states have as much as they care for. Cold New England, which cannot grow it, will require some, and so will the hot South; but nothing like the quantity the West would like to dispose of. There is no demand corresponding to the supply."

The same truth is equally applicable to California; there is no demand corresponding to the supply; yet, after all, our condition is better, and our prospects fairer, than pertains to the great West of the Atlantic states. We have proportionably—if we must look solely to our home market—the largest non-agricultural producing population of any state in the Union; and, as a class, are those who buy but little in advance of their immediate wants; but when they do buy, they have the gold to pay for every pound of the farmer's produce they require.

California has received a large accession to her population during the past summer, and all must be fed, though they were not producers; and these again, from the very nature of the case, their unsettled condition for a time, is a bar to their purchase of any further supplies than just enough for their immediate wants; and yet are entirely without anything like an adequate year's supply. But our purpose is not so much to draw a comparison between our own condition and that of other countries in rela-



tion to the probable disposal of our wheat crop, as it is to show our farmers that they are relying too much upon the one staple product, wheat, for their gains in agricultural wealth; and, particularly in California, where soil and climate are so admirably adapted to an almost endless variety of valuable products.

Had there been a greater attention given to the culture of only a few of other products, that would have found a market world-wide, as wool, wine, hops and sugar from the Chinese sugar cane, all of them products that the world has never yet seen a surfeit of, and, as a consequence, a less area devoted to wheat, our agriculturists would not now be lamenting over their excess of the one great staple. But, as we have frequently remarked, our farmers are the slowest of all men to profit by anything like a change in their accustomed routine of operations.

If, for instance, one of our heaviest wheat-growers, had devoted a single hundred acres of fair quality wheat land, the past season, to sugar cane, with the success that has everywhere attended its culture in this state, on a small scale, you would not now hear that man complaining of a want of a market for his farm product; on the contrary, he would be realizing the present high prices that sugars and sirups are everywhere commanding. There is no more risk in raising a hundred acres of Chinese sugar cane, upon suitable soil, than the raising of wheat, and it pays a great deal better. Farmers employ men to plow, sow and harvest their grain crops; these men are presumed to know how the work is to be done under proper direction. Farmers, themselves not acquainted with the routine of converting the juice of the cane into sugar by the most approved mode, have but to employ one man who is familiar with the process, and success is as certain as that a growth of the cane is obtained; and this is even more certain than a crop of wheat.

The hop is another product that may well claim the attention of our farmers; for probably no other country in the world can equal ours in the production of a superior article; and from the results of experiments already made, there is not a doubt but that the culture of the product might be made one of the best paying, to which a large breadth of our rich alluviums could possibly be devoted. True, their management requires skill in the picking and curing, but it is skill easily attained; and to be a skillful farmer, is nothing more than we ought reasonably to expect of any one, in these days of railroad speed improvements in everything.

There is no other product so extensively cultivated as wheat, or that is half as exhausting to our soils. Vineyards may be cultivated for ages, with a positive improvement of their soils, under the most ordinary treatment for their annual fertilization; and yet who ever heard of a surplus of wine to that extent, that it was found to be as wheat is now, a positive drug, surfeiting the markets of the world? Our farmers should give more attention to a diversity of products—lessening the wheat crop to a paying demand, and substituting others that, whilst they exhaust the soil less, are even more directly remunerative. Look at the present anomaly as regards the prices of the staple grain crops; oats are worth more than barley and barley more than wheat.

## SHALLOW vs. DEEP PLOWING.

IN a previous volume of the *Culturist*, we ventured the assertion that in very many instances the wheat lands of our state were plowed too deeply; the effect of which was, not so much a deterioration of the soil, as a positive falling off in the yield of grain, from what had been the result of the old Spanish mode of shallow plowing, but with a perfect pulverization. We were well aware at the time that, to advocate shallow plowing, would be to take the unpopular side, as regards the views of those who had not yet been made familiar with the peculiar properties of California soils, and the action of a still more peculiar climate upon them.

It was very popular just then to talk long and loud about "deep-tiller plows," subsoil plows and deep plowing, as a substitute for irrigation in the culture of orchards, to which we never offered or raised the least objection; but we were still firm in our opinion, that many of our best farmers, in the older states, were here plowing *too deep for wheat*, upon our adobe lands. No one, with half an eye to observation, could but see that our farmers, with all their supposed improvements in culture over the old Spanish mode, fell far short in the positive yield of grain. Now this apparent anomaly, so humiliating to the forecast and intelligence of our culturists, must either be charged to a very sudden deterioration of the soil, or some defect in the mode of culture.

We were not willing, in the case of our rich, fat, adobe soils, to charge it to a want of fertility; we could do no less, then, than attribute the falling off of the grain crop to some defect in cultivation. It was easy to see that, upon adjoining fields, both seeded at the same time, a marked difference in the yield; whilst the only difference in their culture was, one was deeply plowed, the other shallow. Upon this fact alone, we assumed the position we did, that shallow plowing was preferable upon such soils.

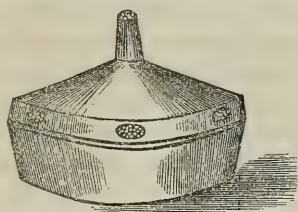
Well, after a few illy directed broadsides from a cotemporary and his correspondents, the smoke and noise of which only served to set a few of his warmest admirers thinking upon the subject, the thing has finally settled down in this, that we were entirely right. And now for the rationale of the matter. In conversation with Cary Peebles, Esq., and Capt. Joseph Aram, of San Jose, upon the subject of fitting adobe lands for wheat, they say in effect, as the result of their experience, as follows: That, with any one or a combination of the ordinary appliances for plowing and fitting adobe soils for wheat, they find it impossible to thoroughly pulverize more than about four or five inches of the surface, that, though the plow may run to a depth of ten or twelve inches, it only moves the soil—it does not pulverize it; that a thorough pulverization of the surface of adobe soils, is the only proper preparation for wheat; that to plow any deeper than can be made thoroughly fine, the consequence of which would be to render open and porous the lower strata of the furrow slice, is to cause the soil to dry down to the bottom of the furrow in consequence of the capillary attraction of the soil being destroyed by its undue porosity.

It is beginning to be now pretty well understood, that soils can easily be made too open and porous for wheat, and solely upon this principle of capillary attraction.

It is well known that fluids will rise by attraction higher in small tubes than in large ones, and just in proportion as soils possess their infinitesimal number of small tubes, or pores over large ones, so is their power to draw up moisture from below, or receive it from the atmosphere, increased. Adobe soils, plowed to a depth of ten or twelve inches, are left at bottom too open and porous, from the impossibility of completely pulverizing the soil to that depth. We therefore maintain, that a lesser depth, even to a furrow of no more than four or five inches, rendered perfectly friable and reduced to a fine tilth, is a better depth of furrow for wheat upon adobe lands, than any greater depth imperfectly pulverized, as it always must be, with the present available implements for the purpose.

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A NEW MILK PAN.—We give a cut of a new milk pan which has recently been introduced, and commend the article to the attention of dairymen and housekeepers. It is covered, yet so arranged as to ensure a constant supply of fresh air to the milk, and thus favor the separation and rising of the cream. The fact that cream will rise as freely in this covered pan as it will in an open one, makes its value at once apparent; for by its use, milk can be protected from dirt and vermin, from which dairymen, in certain situations, suffer such loss and annoyance. By reference to the engraving, it will be seen that the cover has a series of perforations around the lower edge, for air to enter, and a sieve at the top, for the air to escape, thus securing ventilation. Families in the country who have no spring house, must find this new pan of great use to them; covered and set upon a shelf, or upon the cellar floor, the pan is entirely free from molestation, while the best condition for the rising cream is secured.—*Farmer and Gardener.*



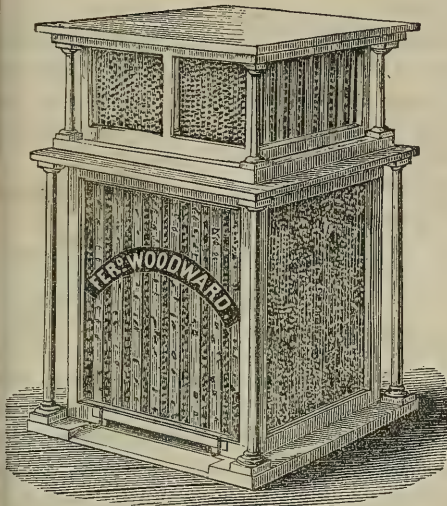
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**GROWING THE SAME CROP TOO OFTEN.**—It has been a practice on many of the light or mixed soils of England, to follow what is called the four course rotation—that is, first, turnips; second, barley; third, red clover; fourth, wheat. It will at once be seen that this system required heavy manuring, and is one of the most profitable courses adopted in Great Britain. At a late meeting of the Farmers' Club of London, the subject was brought under discussion, as it had been found by a long experience, that the frequent return of the turnip crop had rendered the land unable to produce this crop, even with the most liberal aid of artificial manures. The crop grew, but it was not healthy; the turnips were diseased.

Some of the speakers recommended an application of common salt and guano. On the light soils, the salt was found very beneficial; it had a marked effect in stiffening the straw of the green crops. On clay land it was found to make the soil more adhesive, and was therefore considered to operate injuriously.



## WOODWARD'S BEE HIVE.



OUR engraving, as here presented, represents Woodward's cottage hive, as it appeared on exhibition at the late state fair in Sacramento city, and where it received two premiums. Being inclosed with glass, with exact proportion and model of the interior of his improved moveable comb hive, it gives a fair idea of its arrangement and does credit to the artist who prepared it.

The inventor, after a full understanding of all frame hives in use, has constructed one for which he claims great advantages over all others, both in the brood portions, or main body of the hive, and also in the surplus honey chamber. Among other things he says:

"The nature of my improvement consists in:

- 1st. The most convenient shape and form of a moveable comb hive.
- 2d. Placing a guide rest in one edge of each frame to slide against the end board of the hive when moving the frame in or out, to hold it a sufficient distance to clear the bees and to steady the hand of the operator.
- 3d. Fixing cone shaped guide stays in the bottom board between the frames to hold the lower end of the comb in place, and to assist in placing and removing the same.
- 4th. Suspending the frame by the top bar in tapering or notch mortices, to give a free, upward, and side motion when required, and to hold them firmly in place when needed.
- 5th. Glass slides to regulate the bee entrance, with springs to hold the glass or slide in place, forming the most perfect arrangement to destroy drones, prevent the entrance of mice, and no harbor for the bee moth or worm in or about it.
- 6th. Providing a portable combination honey case, so constructed that the bees will store their surplus honey in small detached combs inside a glass case in such a manner as to permit the convenient and ready removal of one or more combs by opening a slide or door, without cutting or defacing the comb removed or those remaining in the case—combining the *glass show case* of the salesman or consumer with the *surplus honey receptacle* of the bee hive, etc.
- 7th. The superior form of the surplus honey frames and mode of adjusting them in the case.
- 8th. The most effectual and only guard against the bee moth—a total dispensation with every crack, hole or corner where a worm can hide that a bee cannot reach.

9th. The best and only mode of ventilation, which gives the bees the full control of their hive—a *single opening*.

10th. The great advantage of handling bees and comb from the top of the hive, over all back, front or side entrances, etc., etc."

All which the inventor says he is ready and willing to prove to the satisfaction of every unbiased person who will give him a call at his apiary, in Sacramento city. Bee men, in particular, are requested to come, examine and try the operation of this superior hive, before encumbering their apiaries with those they will eventually have to reject as inconvenient cumbersome moth-breeders and spider-dens.

The inventor is now applying for a patent for his hive, and which he promises when obtained to dispose of on the most reasonable terms.

### HOW TO MAKE LAYERS.

IF we compare a modern work on horticulture with one published perhaps fifty years ago, we cannot but be struck with the very little that we have apparently learned in half a century, and perhaps come to the conclusion that horticulture with us is as much at a stand-still point as agriculture is said to be in China and Japan. We find the same ideas ground and reground, till, like a beggar's patched-up coat, it is hard to tell what was the original color and texture of fabric, but there is the original size and form—the same idea—the same garment. Like the economy of a too cheap boarding-house, the same food is hashed and re-hashed till it becomes insipid and nauseating, and we turn from the dish with loathing and disgust.

We must not, however, think that because wherever we turn to examine the book-maker's shelves, and find nothing new, there are no ideas or practices current amongst us that were not known to our grandfathers; or that because in every book or paper or periodical we get, we see little besides the same cuts, illustrations and sketches over and over again, we are yet standing awhile longer to weep over the old gentlemen's graves.

Whoever spends but the smallest portion of his time out of his library and easy chair, and gives his eyes and ears, and we may say his hands too, a little exercise outside in the world and amongst men, will find many ideas and practices that the literary hacks and book-making scribes of the present day never dreamed of.

We are led into these observations by seeing recently, in a work of some pretensions, a cut showing how to make a layer. It looked very nice in print; and, when done with a trembling hand and beating heart, in the way described, is often successful. In a nursery, however, where time is money, and the old maxim that "the more haste the less speed" is swallowed with a due mixture of savory mental condiments, a quick, steady workman is of great importance, and then the way of layering here



noticed, and so universally printed about and sketched, fails in a majority of cases. We allude to cutting the notch on the *under side* of the shoot. The consequence in one-half the cases is, that the shoot breaks off, and the layer is lost; or, if not broken, presents somewhat the appearance of figure one, and is very much weakened.

A much better plan, and one which is now much in vogue with the best propagators, is to cut the tongue on the *upper surface*. On bending down into the soil, the tongue is then twisted on one side, and the young shoot intended to form the future plant may then be lifted up and bent towards the parent as rapidly as one pleases, without

any danger of its snapping off. There is another advantage in this way of layering.

It is often necessary, in the stereotyped way, to place a chip or something between the tongue to keep it open. By this, the twisting of the tongue aside keeps it always separate from the old cut.

Again, by this mode, very green and strong shoots can be operated on—Magnolias, for instance, in June, and plants be got well rooted by fall, instead of waiting for the wood to ripen in August, when we have to wait for another year before our layer is sufficiently rooted to take from its parent.—*Gard's Monthly*.



**RHUBARB WINE.**—To make this, the rhubarb must be quite ripe; to every gallon of rain-water boiling, cut eight pounds of rhubarb into thin slices, put it into your tub, cover it close with a thick cloth or blanket, and stir it three times a day for a week; then strain it through a cloth, and add four pounds of lump sugar, the juice of two lemons and the rind of one. To fine it, take one ounce of isinglass and one pint of liquor, and melt it over the fire; be sure you do not add it to the rest of the liquor till quite cold; then cask it. When the fermentation is over, bung it down. Bottle in March, and the following June it will be fit for use. The present time will do to make it, but a month or two earlier is better.

To every five pounds of rhubarb stalks, when sliced and bruised, put one gallon of cold spring water; let it stand three days, stirred two or three times every day; then press and strain it through a sieve, and to every gallon of liquor put three and one-half pounds of loaf sugar, stir it well, and when melted barrel it; when it has done working bung it up close, first suspending a muslin bag with isinglass from the bung into the barrel—say two ounces for fifteen gallons. In six months bottle it and wire them; let the bottles stand up for the first month, then lay four or five down lengthways for a week, and if none burst, all may be laid down. Should a large quantity be made it must remain longer in the cask. September is the time to make it. I have just bottled a quarter cask of rhubarb wine made by the above recipe, which is pronounced much better than half the champagne one gets.—*Exchange*.



## Editor's Repository.

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DURING the last two months, we find we have devoted a large space of our time to the several fairs—agricultural, horticultural, state and county. The effect of our truancy is seen, not so much in the reading matter of the *Culturist*, as in the sparseness of its engravings and illustrations. It is our purpose hereafter to give in every number of the *Culturist*, at least one well executed lithograph of fruit, plant or flower, instead of wood engravings; but we may continue to illustrate our subjects, from time to time, with wood engravings, in addition to our regular frontispiece in lithograph.

We have had in contemplation to give our patrons, a succession of beautiful engravings, executed in the style of our September and October numbers' frontispiece, illustrative of HOMES IN CALIFORNIA, in which we shall endeavor faithfully to portray the beauties and peculiarities of the residences and homes of our citizens, as they actually exist amongst us; thus showing to the world abroad—for the circulation of the *Culturist* is not confined to California—that even Horace Greeley may be in error, when he says, we seem to be making no calculation to stay, or make permanent homes here.

There are, in California already, very many beautiful country residences, surrounded with still more beautiful grounds and scenery; and which present to the eye the appearance of anything but a desire, on the part of their proprietors, to abandon them. After the necessary arrangements shall have been completed with our artists, we shall commence their publication and continue them regularly. At the close of a volume or two, they will be collated and, with an elaborate letterpress description of each, republished in book form, apart from the *Culturist's* pages, making HOMES IN CALIFORNIA a desirable volume for the library or parlor of every resident citizen in the state. Will our friends and patrons examine the engravings in September number, as specimens of the style in which we shall get up our Homes, and any who may feel a desire to furnish us with originals of their residences and grounds, will please address us.

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OUR FRONTISPIECE.—Hereafter we shall give, in each number of the *Culturist*, one or more finely executed lithographs of our most popular fruits, believing they will be more acceptable to the majority of our patrons than the best wood engraving that can be produced. In the present instance we give a fac simile of a specimen of the Vandervere apple, taken at random from a quantity on sale by C. L. Kellogg, 111 Sansome street, from the premium orchard of L. B. Lathrop, of San Jose. The specimen was not chosen on account of its size, for there were many larger, but was taken in preference as indicating the general form of the apple, as produced in the valley of Santa Clara.

Mr. Lathrop's orchard, which has taken the premium for two years in succession over all others in the state, receives the benefit of an abundant and judicious irrigation from artesian water, and

his fruit thus far has been in keeping with the excellence of his trees, superior in point of size and unsurpassed in flavor and the property of late keeping, as compared with the same varieties in other portions of California.

Downing says: The Vandervere, when in perfection, is one of the most beautiful and finest apples. But it requires a rich, light, sandy soil, as in a damp, heavy soil, it is almost always liable to be spotted, unfair and destitute of flavor. It is a native of Wilmington, Delaware, and took its name from a family there. It is a fine old variety, and is highly worthy of extensive cultivation, where the soil is favorable. We have before us some apples of this sort, which are exceedingly beautiful and excellent.

Fruit of medium size, flat. Skin, in its ground color, yellow, streaked and stained with clouded red, but on the sunny side, deepening into rich red, dotted with light gray specks. Stalk short, inserted in a smooth, rather wide, cavity. Calyx small, closed, set in a regular, well-formed basin, of moderate depth. Flesh yellow, crisp and tender, with a rich and sprightly juice. October to January.

In California it more than maintains its high character as one of our best autumn and early winter apples, and is deserving of cultivation as a superior market fruit. Our next number will contain a beautiful lithograph of the BEURRE D'ANJOU pear.

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SANTA CLARA VALLEY AGRICULTURAL SOCIETY.—We were on hand at the opening of this society's exhibition, on Tuesday the 18th ult. It was the third annual fair of the society. There seems to be a more general interest felt by the people of Santa Clara county, in their annual cattle show and fair, than anywhere else in the state. It seems to be a county populous with farmers of intelligence, enterprise and thrift, appreciating the advantages that result to all participating in these annual gatherings, for viewing the finest stock in the state, and the exhibit and comparison of the best cultivated fruits and products of the soil.

To say that we were well pleased with the exhibit of fine animals, in the spacious stalls of the society's show grounds, does not convey what we would wish in admiration of them; because there were many that would be deemed truly superb animals for any country; and then the opportunity for showing them off to the best advantage, is not surpassed by any other show ground in the state.

The exhibit of fruits at the society's pavilion, if not in the aggregate equal in quantity to that of the state fair, altogether surpassed it, or that of any other of the fairs of the season, in the size, beauty and perfection of its specimens. Santa Clara county for fruit-growing, is at yet the banner county of the state; how long she may continue so remains to be seen.

It was the original intention to continue the cattle show and fair but four days; but on the fourth, at least three thousand persons were in attendance, and such was the interest and enthusiasm pervading the masses, it was determined to continue the fair for a week longer, or until the interest in the same should seem to flag. The organization and management of the society has thus far proven a decided success, whilst a brilliant future seems to await its progress. Our very clever cotemporary of the Alameda County *Herald*, makes the following remarkable, though very honest, confession:—"The third annual fair of the Santa Clara Valley Agricultural Society was held at San Jose last week. We are glad to know that the exhibition was a successful one, and was fully up to the expectation of its friends. The display of fruit was particularly attractive, probably excelling anything of the kind ever attempted in the state, if not in the world. Unprejudiced persons readily admitted that the specimens of apples shown on the Santa Clara tables were far superior to any exhibited at Sacramento; and though reluctantly we say it, we must admit that our own tables were outdone in some respects. There were less varieties than were shown at our fair, but the samples were, as a general thing, larger and higher colored—properties which are probably attributable to the fact that the Santa Clara fruit is mostly grown by irrigation, and it was shown two weeks later in the season than ours, which, at this season of the year, is a very important item of consideration. We also find consolation for our defeat in the fact that we have not the experience that our neighbors enjoyed. This is their third show, and we have made but one. With the expe-

rience of two or three years, we shall hope to at least equal, if not excel our worthy cotemporary. In grapes, we most readily yield the palm to Santa Clara. It requires no further demonstration than the recent fairs, to show the superiority of the climate of San Jose valley over Alameda, in the production of the grape. At Santa Clara, one entire table, of no stinted dimensions, was loaded with a bountiful supply of this truly delicious fruit, embracing from twenty to thirty varieties of foreign and native grapes; while at our fair, very few were offered for exhibition. Our orchardists and nurserymen have become satisfied that the grape and peach crop will not succeed in this locality, and are now giving greater attention to apples, pears and plums, all of which do remarkably well in this valley. The exhibition of live stock at San Jose was excellent, particularly in horses. Some of the finest stallions of the state were shown there, and won the admiration of all. The cattle, except in bulls, was inferior to our show—less in quantity and inferior in quality. As a whole, however, the display was a grand one, alike creditable to the society and profitable to exhibitors and spectators. We congratulate the society of our neighboring county upon the success that attended its efforts.”

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**ALAMEDA COUNTY FAIR.**—This fair, which was held at the society's pavilion and stock grounds, in Oakland, for ten consecutive days, except Sunday, commencing on the 4th ult., proved as we had anticipated, a very successful effort as the county's first annual fair. A much larger and fairer display of fruit and vegetable products graced the tables of the pavilion than we had anticipated; and, considering that nearly all of the fruits were produced with but little or no assistance from irrigation, they were certainly highly creditable to the producers as well as to the character of the soil and climate of that favored county—highly favored in its proximity to the best market on the Pacific coast.

Some of the finest stock in the state occupied the stalls, and were visited and admired by crowds from both city and country. We can hardly say too much in praise of the admirable arrangement and management of every interest and department pertaining to this, the first agricultural exhibit of Alameda county. The society has now a beautiful and spacious pavilion and stock grounds, with fixtures, all nearly or quite paid for, which will greatly facilitate the future operations of its managers.

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**ARTESIAN WELLS.**—More than one entire column of the *California Farmer* of October 28th, was devoted to an attempt to prove that the artesian wells of San Jose, are draining all the lagoons, mountain streams and lakes of the surrounding country of their waters. The fact that many of the lagoons, lakes, etc., contain less water than they did three years ago, is brought forward to prove that artesian wells are “a curse.” What a pity it is that, in support of the position assumed, there are not artesian wells throughout all the middle and northern portions of California, where the same drying up of all the common wells and mountain lakes and streams, has been as steadily apparent for the last four years as in and around Santa Clara valley; yet the truth of this cannot be denied.

Honey lake, formerly a large sheet of water to the east of Nobles Pass of the Sierras, that was never known to be dry before, is now without water, and so of Cacey's lake; the Mono lagoon, near Mono lake, has dried up, leaving large quantities of fish to perish, the size of many indicating that years must have elapsed since a similar occurrence, if ever it happened before. These are instances along the eastern base of the Sierra Nevada range. Is it the draft made upon them by the artesian wells of San Jose that is doing all this mischief? Along the entire border of the Sacramento valley from Amador county to the northward, for more than two hundred miles, the common wells of the country were never known so low before, and many have been deepened within the last two years in order to secure their heretofore abundant supply of water. Is it possible that the San Jose wells are affecting the country hundreds of miles distant, with vast ranges of mountains intervening? Or is it not simply this, that for the last four or five years, we have not had a constant succession of rainy winters as had been experienced, with but little deviation for years before. If any one will



ut take the trouble to examine the concentric layers or annual growth of new wood upon the stumps of felled trees, they will see there, very positive indications that the climate of California has ever been subject to heat and cold or of excessive wet or drought, that has had the effect to produce, for a recession of years, a largely increased growth over other series of years; and the probability is strong that it was the effect of an excess or deficiency of water only; and that, when we get another winter like that of '49 and '50 or '52 and '53, we shall hear nothing more for some time of the want of water in our lagoons or mountain lakes.

But we will give one instance out of California, and apart even from the continent. "The island of Teneriffe, in many of its natural features, resembles southern California, and is moreover a vine growing district. For a series of years, commencing about the year 1840, through lack of water, the crops entirely failed. Their little streams that had afforded abundant irrigation for hundreds of years, suddenly became as dry as San Diego river, and the fair purple clusters that were expected to shed their sweetest juices, suddenly lost their bloom, shrivelled and dropped to the earth. [Mark this! they irrigated their vines, and of the wines of the Azores, Canary and all the Western islands, Teneriffe has always produced the best. The Malmsey of Teneriffe is everywhere acknowledged excellent.] When, year after year, the inhabitants saw their diminutive country growing more and more desolate, and themselves impoverished, what did they do? Charge the lack of moisture to the artesian wells? No: but waited till the seasons changed and brought them water in abundance.

How sorry our cotemporary seems to be, that the legislature will permit the people of San Jose valley, with their artesian wells to "draw waters from the deep bowels of the earth to pass off into the ocean and mingle with the briny deep." And in this, a mere nutshell, lies the whole force of his argument; the ocean is supposed to be both briny and deep; hence, "artesian wells a curse."

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**CHUFAS.**—We have steadily maintained that this product, for fattening swine and poultry, so highly esteemed wherever introduced, would yet become a valuable acquisition to the products of California. Wherever trial has been made with fair condition of soil and climate, the yield has proven immense and of the finest quality. D. E. Hough, of Oakland, has grown them for two or three seasons with uniform good success. His crop this year, estimating from the quantity actually produced upon a square yard, will be equal to four hundred bushels to the acre—in fact a fraction over this; but it is clear that, with proper cultivation, in a genial soil, three hundred bushels to the acre would not be considered an unusual yield.

E. B. Crocker, Esq., of Sacramento, exhibited some very fine masses of chufas—for they grow in perfect masses in the soil—at the late State fair. They were of his own production, and attest their perfect adaptability to the soil and climate of that locality. We are aware that to thus particularize names and places where the chufa has been successfully grown, is an excellent advertisement for the same; but we look not to this; our object is to endeavor to persuade our farmers of its value, and induce its culture. We do not know that Mr. Crocker has any seed for sale; but as we have received several inquiries in relation to where a supply can be obtained suitable for seed, we state for their accommodation, that Mr. Hough will sell a portion of his crop. Of his terms, we are not informed.

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**SHADES FOR STOCK.**—The old adage of "Make hay while the sun shines," is equally applicable in this country in regard to *sheltering stock* while the sun shines. That cattle, horses, indeed all domestic animals seek the shade of trees and forests wherever available, through a greater part of the sunny days of summer, ought to be a sufficient proof that such shades are agreeable to them, and consequently beneficial to their health. There is not a doubt but the perfect torrent of sunshine that pertains to our summers in all localities destitute of shade trees, is severe on stock beyond merely its effect upon the smooth and sleek condition of the hair and skin.

Light, it is true, is a powerful stimulant in promoting the healthy development and growth of both plants and animals; but it must be understood that it is not from the light the animal endeavors to escape, but the intense heat that accompanies our summer's sunshine; and as it is natural for

all animals to seek shade in preference to food even, during the hottest part of the day, it seems much like a species of cruelty to deprive them of it, keeping them day after day in totally shadeless fields, under an almost tropical sun.

We believe it would be a profitable investment were our farmers to construct shades, which can be easily done with straw stacked upon raised platforms of posts and cross poles, in all their stock grounds destitute of natural shades. We say of straw, because we have seen them constructed of this material. They should be made only high enough that animals may not eat the straw from the under side. Quiet, is an important condition to the well-being of most domestic animals; but particularly is this the case whilst seeking repose during the sultry days of summer, and they will be the more quiet as all food is placed entirely out of their reach.

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**GRAPE CUTTINGS.**—Experience has already demonstrated the perfect adaptability of nearly every variety of foreign grape, to successful open ground culture, in all the lower valley and foot-hill country of California. The superiority of perfectly grown foreign grapes for the production of the finer wines, over native varieties, would hardly have admitted of a doubt, even had not repeated experiments already made, brought positive proof. Even the old Mission grape of California, though originally a foreign variety, is but a third or fourth quality grape.

The fact established, of the superiority of the foreign varieties, has led to a largely increased demand for cuttings; indeed, to such an extent has the demand already reached, it is only with a few of our largest propagators that a considerable number can be obtained, and these, to a very great extent, have already been contracted for. Those who are intending to establish vineyards the coming winter and spring, will be surprised, on application, to find few or no cuttings of any of the finer foreign varieties obtainable, and such as can be secured, only at high prices.

The consequence of this early and extraordinary demand for cuttings will be this: irresponsible venders will be found itinerating the country in all directions, palming off spurious vines and cuttings for the genuine varieties. Not only will thousands of such cuttings prove, at the end of the first bearing year, to be nothing more than the common Los Angeles, Mission or California grape as it is called, but very many may find themselves worse off than this; after cultivating for two or three years, with the greatest care, their foreign varieties as supposed, they will be disappointed in finding them only the indigenous native grape of our creeks and rivers, good for little else than to set one's teeth on edge. Cuttings, from these vines, owing to their short jointed habit of growth, can be found so closely resembling many of the foreign varieties, as not to be distinguished till they have made a year's growth, and many of them not till bearing. The only sure way to avoid being imposed upon, is to buy only of responsible nurserymen, or owners of vineyards on whom you can personally rely. The additional price you may have to pay for vines—true to their labels from responsible parties—is nothing in comparison to the result.

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**THE GRAPE IN ALHAMBRA VALLEY.**—That certain districts of California are to become famous in the future, some for the quantity and others for the quality of their wine product, is as certain as that these differences occur in all other wine-producing countries. Our almost endless diversity of soils and climates, differences in latitudes and altitudes, would naturally suggest the propriety of different modes of training and culture, as well as the better adaptation of certain varieties of the grape to particular localities; all of which have their affect upon the wine produced. Quite unexpectedly to many, the California grape, instead of being deemed the best grape known upon the Pacific coast, as it was ten years ago, is really quite inferior in most localities to very many of the more recently introduced foreign varieties; and yet there are not wanting certain districts in which it seems perfectly at home, ripening with the greatest certainty in the most perfect manner possible; whilst in other places, in which so far as a cursory observation would go, would indicate an equal fitness for their perfect growth, they hardly become, under the most favorable conditions of soil and culture, anything more than a second or third rate grape.

In Santa Clara valley, this grape can in nowise compare with the same variety as grown in

Alhambra valley, back of Martinez, in Contra Costa county. During our recent visit to San Jose, in the vineyards of Mr. Delmas we were shown the Mission grape, hardly yet fit for eating and inferior in every respect, to nearly every variety of foreign grapes there grown. But let any one visit the fruit store of J. W. Gale & Co., 99 and 101 Davis street, and he will see the most perfectly grown and fully matured and highest flavored grapes of this variety ever produced, and which are now readily bringing two cents per pound more than the same grape from any other portion of the state.

It would be well worth the while of those interested in the culture of the grape and particularly of this variety, to call and see the perfection to which this grape is brought in the soil and climate of Alhambra valley. Or if there is anything in the mode of culture or training that secures such perfect development, then would it be well to ascertain in what the peculiarity consists, as perhaps it might be applied with equal advantage to the culture of other varieties in other places. The admirably perfected Mission grapes, to which we allude, are the product of the vineyard of John Strentzel, Esq., near Martinez, and the perfection to which other varieties of the grape are grown there, give undisputed evidence of its admirable adaptability to a general grape culture.

ADVERTISING.—More than eighteen hundred farmers, miners and mechanics, now read the *Culturist* monthly, in California alone. Very many of these are intending to set more or less grape vines and fruit trees the ensuing fall and winter. Some of our most reliable nurserymen will lose the sale of hundreds of trees by their neglect to have their advertisements appear in this, the November number of the *Culturist*. With such deciduous trees as have already shed their leaves, the best time for transplanting is at hand, and should not be delayed for a day after the soil is in proper condition as regards moisture. As our terms for advertising are liberal, and with much the largest circulation of any agricultural journal on the Pacific coast, and almost exclusively among farmers, or miners and mechanics with rural homes, the *Culturist* is the best medium for advertising that can be selected by the nurseryman or seedsman. See our terms.

SPIRIT OF THE TIMES.—At a meeting of the Santa Clara valley agricultural society, held at the City Hall at San Jose, at 2 o'clock P. M., on Monday October 24th, 1859—present Cary Peebles, Vice-President and President *pro tem.*; Charles B. Younger, Secretary; and the following members, to wit: L. H. Bascom, Coleman Younger, H. Shartzler, J. M. Williams, W. O'Donnell, L. Prevost, H. H. Winchell, William Daniels, Isaac Bird, J. Miller, A. S. Beaty, F. S. McGirr, and fifty others. The following proceedings were had, to wit: The President introduced Mr. Marcus D. Boruck, editor and one of the proprietors of the San Francisco *Spirit of the Times*, who announced that at the request of a large number of the farmers of Santa Clara and the state generally, he would henceforth devote a portion of his paper to their cause, and that their interests would be fairly and properly represented. Whereupon, on motion, it was resolved, that the Santa Clara valley agricultural society recommend the *Spirit of the Times* to the support of the farmers of the state generally.

Here is a matter that must meet the hearty approval and support of the farmers of California. The state has long felt the need of a weekly journal devoted more exclusively to the interests of stock-growers and agriculturists generally, than any paper existing amongst us. The *Spirit*, as indicated by its name, is a sprightly and admirably conducted journal of its kind; and, with its new feature, being without a competitor, as a hebdomadal devoted mainly to the agricultural interests of the state, should meet with encouragement.

THE LAW OF NEWSPAPERS.—Some publishers of newspapers are continually reminding their patrons, that, by law, they can collect pay so long as those who have once ordered them, continue to receive them, or the publisher chooses to send them, till all bills are paid and the paper ordered stopped. We wish it to be distinctly understood that we hold no man responsible beyond the length of time for which he subscribed; we consider his subscription then as having ended, and in general, we shall discontinue sending at that time. If we overlook the time in any instance, and a copy is received after the time of subscription has expired, such former patron of the *Culturist* will please receive it kindly as a gift, until we discover our neglect to strike his name from our list.



## METEOROLOGICAL TABLE,

For Sacramento, California; being an abstract of Observations made during the month ending September 30th, 1859; Lat. 38°, 34', 41", N.; Long. 121°, 27', 44", W. Height of the lower surface of the mercury, 41 feet above the sea at San Francisco. The observations are made three times a day conformably with the hours adopted by the Smithsonian Institution. The indications of the barometer are given corrected for capillary action, and reduced to the temperature of 32° Fahrenheit, but not corrected for its height above the sea level. The rainy days are included under the head of cloudy and foggy, and are also put separately to show the number of days on which ain fell during the month. The force of the wind is estimated and registered in figures from 0 calm to 10 a hurricane.

By THOS. M. LOGAN, M. D.

| SEPTEMBER, 1859.                    | 7h. A. M. | 2h. P. M. | 9h. P. M. | MONTH.         | AVERAGE OF SEVEN YRS. |
|-------------------------------------|-----------|-----------|-----------|----------------|-----------------------|
| Barometer, Maxima .....             | 30.126    | 30.081    | 30.085    | 30.126 inches. | — 0.015 inch.         |
| “ Minima .....                      | 29.784    | 29.751    | 29.725    | 29.725 “       | + 0.027 “             |
| “ Mean .....                        | 29.959    | 29.917    | 29.906    | 29.927 “       | + 0.017 “             |
| Thermometer, Maxima .....           | 67.00     | 82.00     | 73.00     | 82.00 deg.     | — 4.86 deg.           |
| “ Minima .....                      | 56.00     | 64.00     | 61.00     | 56.00 “        | + 1.33 “              |
| “ Mean .....                        | 60.37     | 71.67     | 65.63     | 65.89 “        | — 2.23 “              |
| Force of Vapor, Maxima .....        | .483      | .543      | .581      | .581 inches.   | + .007 inch.          |
| “ “ Minima .....                    | .229      | .226      | .287      | .226 “         | — .010 “              |
| “ “ Mean .....                      | .372      | .425      | .433      | .410 “         | + .004 “              |
| Relative Humidity, Maxima .....     | 82.00     | 79.00     | 84.00     | 84.00 per ct.  | + 3.07 p. ct.         |
| “ “ Minima .....                    | 53.00     | 25.00     | 47.00     | 25.00 “        | + 2.95 “              |
| “ “ Mean .....                      | 70.93     | 56.73     | 69.17     | 65.61 “        | + 4.51 “              |
| Number of Clear Days .....          | 16        | 13        | 20        | 16 1-3 days.   | — 3 2-3 days.         |
| Number of Cloudy and Foggy Days.    | 14        | 17        | 10        | 13 2-3 “       | + 3 2-3 “             |
| Number of Rainy Days .....          | .....     | .....     | .....     | 2              | + 2-3 “               |
| Quantity of Clouds .....            | 1.3       | 1.9       | 1.1       | 1.4            | — 0.3                 |
| Quantity of Rain and Fog .....      | .....     | .....     | .....     | 0.025          | + 0.016 inch.         |
| 1st Days and 2d, Force of N. Wind.. | 8 2.5     | 10 2.4    | 4 1.7     | 7 1-3          | 2.2 + 2 1-3 + 0.7     |
| “ “ “ N. E. Wind .....              | 0 0.0     | 0 0.0     | 0 0.0     | 0              | 0.0 — 2-3 — 0.5       |
| “ “ “ E. Wind .....                 | 4 1.5     | 0 0.0     | 0 0.0     | 1 1-3          | 0.5 + 1-3 — 0.2       |
| “ “ “ S. E. Wind .....              | 8 1.5     | 0 0.0     | 4 1.0     | 4              | 0.8 — 2 — 0.4         |
| “ “ “ S. Wind .....                 | 6 2.8     | 6 2.8     | 10 2.0    | 7 1-3          | 2.5 + 1 1-3 — 0.2     |
| “ “ “ S. W. Wind .....              | 3 2.0     | 7 2.3     | 6 1.9     | 5 1-3          | 2.1 — 0 + 0.2         |
| “ “ “ W. Wind .....                 | 0 0.0     | 4 3.5     | 5 0.9     | 3              | 1.5 + 2-3 + 0.3       |
| “ “ “ N. W. Wind .....              | 1 2.0     | 3 3.3     | 1 0.0     | 1 2-3          | 1.8 — 1 2-3 — 0.0     |

## Thermometrograph.

|                                           | DEG.  |                                                 | DEG.  |
|-------------------------------------------|-------|-------------------------------------------------|-------|
| Highest Reading by day on the 18th .....  | 85.00 | Mean of all Highest Readings by day .....       | 73.93 |
| Lowest Reading by night on the 14th ..... | 50.00 | Mean of all lowest readings by night .....      | 54.23 |
| Range of Temperature during month .....   | 35.00 | Mean daily range of Temperature during mo. .... | 19.60 |

REMARKS.—The changeful and capricious weather, generally experienced about the period of the autumnal equinox, has predominated during the entire month, and the usual serenity of our summer sky has been frequently disturbed by cumuli clouds, threatening rain. In fact, on two separate days—the 15th and 19th—a sprinkle was perceptible. On several occasions, in accordance with what we advanced in our last month's remarks, a sultry and oppressive condition of the atmosphere prevails, especially towards evening. The chief physical changes, however, to remind us of the advent of winter, are to be found in the increase of aqueous vapor in the atmosphere, and the decline of about five degrees in the temperature of the river since last month.

Another of those polar lights, which was the subject of so much wonder and admiration on the 28th of last month, was witnessed here on the 1st. When first observed, about 10 P. M., there was a warm glow in the northwest, and two white, silvery clouds in the north. Soon the light extended in all directions, owing to the cloudy state of the atmosphere, until the entire firmament was suffused with a ruddy light—so bright at times that the hour could be distinguished on the dial of a watch. Towards 12 P. M. a splendid glowing corona was seen extending from the eastern to the western horizon, and the whole southern hemisphere appeared to be in one continuous blaze. These ever changing, luminous phenomena continued to manifest themselves in divers phases until lost in the dawning day.





BEURRÉ D'ANJOU



T H E

# CALIFORNIA CULTURIST.

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D E C E M B E R, 1 8 5 9.

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## LIME AS A FERTILIZER.

A GENTLEMAN largely engaged in agricultural pursuits, and particularly in the production of the cereals, but who desires to be known in this connection only as an "Old Californian," has addressed us a note, making inquiry as to the probable value of lime as a fertilizer for our grain fields; believing, as he says, that something must be done to arrest their rapidly waning fertility, under the excessive cropping to which they are subjected. He thinks if lime could be used with the same good results to vegetation in California, that has attended its use in other countries, the fact should be known, as it is one of those earths that can be plentifully, and in very many localities, cheaply obtained.

We have no experience in the use of lime as a fertilizer of California soils, nor have we known of its application anywhere to field culture upon the Pacific side. As best meeting the views, or answering the inquiries of "Old Californian," as regards the chemical effect of lime and its action upon soils, or as forming one of its constituents, we can hardly do better than present the following extract from an essay on this subject from the pen of Dr. Wm. Prescott, which we copy from the transactions of the New Hampshire state agricultural society:

"The study of soils, in their connection with cultivated plants, present a wide field for experiment and critical research.

It is folly to suppose that all soils can be improved with equal facility and profit, or that all vegetables will flourish with equal luxuriance on the same variety of soil. The best way to impart a high degree of fertility to any given piece of earth, is a problem often very complex and difficult of solution. This renders it highly necessary that the farmer investigate the science of fertility; that he study carefully into

the chemical composition, not only of the different varieties of soil upon which he is to operate, but also of the different vegetables he intends to cultivate. He should endeavor to discover what portion of the constituents of plants he should husband with the greatest care, and what part nature will supply in water, air and other materials, necessary to their growth.

To suppose that one can produce a root, seed or stem from other ingredients than such as providence prepared and fitted for the purpose, is to assume that there is no difference between lime and iron, or that wheat and the fir tree are identical.

Finding, as we do, many different elementary bodies in all fertile soils, and in all cultivated plants, it is alike unphilosophical in science and unsafe in practice to assume that any one mineral can perform the functions of any other mineral in the economy of plants and animals. We may be profoundly ignorant of the office performed by an atom of lime, iron, sulphur, carbon, phosphorus, chlorine, nitrogen, potash or magnesia, in any of the phenomena of vegetation; yet direct experiment and universal experience has proved the necessity of having all these substances in the soil, as well as silica in a soluble form, before it can be productive of those valuable plants cultivated by the farmer.

For the formation of productive soils, an intermixture of at least three earths—clay, sand and lime—is absolutely necessary. The oxide of iron is also an excellent ingredient. Vegetables will not grow in any *one* of these earths *alone*, nor will they flourish in any *two* of them, if the *third* be entirely wanting. He who possesses on his estate these three earths—clay, sand and lime—of a good quality, with facilities for draining or irrigation, has all the materials for permanent improvement.

The other most valuable elements of fertility, and valuable in proportion as they happen to be deficient in any soil, are ammonia, phosphorus, sulphur, potash and chlorine. It may happen that one of these is abundant, and another is scanty, or that *more* than one is scanty, or even altogether is absent, etc. Now to know and understand *which* is deficient, or altogether wanting, and how to supply that deficiency, is a desideratum of the first importance to the practical agriculturist.

Plants are essentially composed of carbon, oxygen, hydrogen and nitrogen. Some small portion of the earths and alkalies, also, is found by chemical analysis in plants, which in all probability are formed from more simple elements, by the process of vegetation; for it is now ascertained that the earths and alkies are compound substances. Where the essential earths are properly intermixed, instances are recorded of land producing a succession of good crops for many years without manure; but such instances are very rare, for in this state, and in most of the states, the soil is either deficient in some one or more of the earths, alkalies or vegetable mold, or they are too wet or too dry, too loose or too adhesive, to admit plants to extract food or pabulum, in proportions necessary for their nourishment and growth.

How are these difficulties to be corrected and overcome? It is at once obvious that the deficiencies must be supplied by the addition of the earth or alkali wanting; while the tenacity, compactness and humidity is to be overcome by the addition of manures. These will not only furnish an abundant supply of carbon, hydrogen,

nitrogen, etc., which the plants require, but they will also render the soil more loose and pulverulent, and thereby enable the plants to extract these substances with greater facility.

Phosphoric acid, ammonia and potash are the substances that are least abundant in nearly all cultivated lands. If we study the natural products of the earth in connection with the elements of fertility, we shall find the large, long-lived and thrifty forest trees grow only in soils which are rich in potash. When the farmer has occasion to burn maple, elm, oak, walnut, beech, birch and other hard-wood forest trees, he finds them rich in this alkali; and he also finds that soils that produce this kind of timber, are always good for agricultural purposes. Their productiveness is not to be ascribed to potash alone, for all the other elements of available crops, are equally present; but the existence of an abundance of magnificent potash-yielding forest trees will never deceive the farmer as to the natural capacities of the soil. Hence, when a farmer can learn what amount of potash one hundred pounds of his soil contains in an available condition, he may judge with considerable safety of the natural resources of his land. This alkali exists in some soils as high as two per cent.—a quantity, however, rarely found—and in others, ten thousand parts of earth yield not one of potash. Such soils are always unproductive—nearly barren. And so, also, with lime; land that contains no lime is unproductive, but so small a quantity one-fifth of one per cent. will render it fertile, for even this small quantity amounts to more than two tons to every acre, supposing the soil to be but seven inches deep.

The best wheat-growing soil of our western prairies contains only from one to one and a half per cent. of lime. This is the principal earth which has been used to intermix with soils, and is considered as a manure; but its operations as such are very imperfectly understood. It combines with vegetable and mineral acids in the soil, which might be injurious to vegetation. It also unites with silica, forming the silicate of lime. In all these forms it operates as a fertilizer, by promoting the growth of plants to which it is applied, and also by neutralizing those substances which are deleterious to vegetation. If the soil contains copperas or sulphate of iron, which is poison to most vegetables, the lime will seize the sulphuric acid contained in the copperas, and form the sulphate of lime or gypsum, a well known fertilizer, and leave an oxide of iron which is also essential in all productive soils.

Swamp muck contains a large quantity of vegetable acid which renders it worthless until the acid is neutralized by being mixed with lime, or some other alkaline substances. So that whether lime exists in soil in the form of a phosphate, carbonate, sulphate, humate or silicate, it performs a healthful influence in promoting the growth of the crop.

The phosphate, as it exists in the bones of animals, is being better understood than formerly, and by those who have made trial of it, is duly appreciated and highly prized for its fertilizing properties.

In fact, lime, in all its forms, and in all states of combination in which it exists, or is applied to the cultivated field, produces a salutary effect, both on the land and on the production of the soil. On the land, by opening and rendering freer such soils



as are stiff and clayey, while it increases the porosity of those that are already light and sandy. To the former the mechanical action is generally favorable; to the latter, frequently the reverse. It increases the fertility of all soils where lime does not already abound, and especially adds to the productiveness of such as are moist or contain much inert vegetable matter, which it calls into action. When used freely it will destroy plants which are natural to sandy soils, also such as contain a free acid like sorrel. It not only increases the quantity, but improves the quality of the crop. Grain is heavier and produces more flour to the bushel, where the soil possesses a sufficient supply of this earth, while the flour is also said to be richer in gluten.

It renders potatoes more agreeable to the taste and more mealy. It improves turnips both in quantity and quality, while peas are more pleasant to the taste, and it is said more easily boiled soft. The effect of lime is greatest when well mixed with the soil, and kept near the surface, within the influence of the atmosphere, also upon such soils as are newly turned out by the plow; and this effect is increased by the vegetable and other organic matter which has accumulated within them.

There is one thing in relation to lime the farmer should never forget, and that is, that it *expels ammonia from fresh and decomposing manures*. It should, therefore, never be applied to the same piece of land at the same time or within several months of the time that the ammonial manure is applied, whether that consists of stable manure or guano. When lime is to be applied to the same tract with the manure, it should be applied in the autumn, when it will become converted into the mild state—that of carbonate of lime—before the manure is laid on in the following spring. For the carbonate of lime has no sensible effect in expelling the ammonia of decomposing manure.

As a chemical constituent of the soil, lime supplies a kind of inorganic food which appears to be necessary to the healthy growth of all our cultivated plants."

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### THE APPLE TREE BORER.

**T**HIS is the larva of a brown and white striped beetle, which makes its appearance early in June, and deposits its eggs during June and July. In its larva state, it is a yellowish, or brownish white grub, with a brownish, flattened head, about one and one-fourth inches in length, when fully grown. It is said to remain in this state two or three years before assuming the perfect form. According to most writers, the eggs are deposited at the collar of the tree, but within the writer's observation, this is seldom strictly true. They are generally found between six inches and two feet above the surface of the ground; although he has taken out large numbers of them from the trunks and branches of trees, sometimes from eight to ten feet above the collar. The idea has been advanced, by a western writer—if I mistake not—that this latter is not identical with the true apple tree borer; in reply to which the writer can only say that he is only familiar with the insect in its larva form.

never having watched it through its transformations; and that, in this form, they are identical, both in appearance and mode of operating, with the single exception, perhaps, that when located near the collar of the tree, they burrow in the cambium or sapwood during the season of growth, taking shelter beneath the surface of the wood on the approach of winter; while, in more elevated locations, they bore their way beneath the surface, apparently, as soon as their strength is sufficient for that purpose. If we consider them identical, this difference must be attributed to that instinct which teaches all insects to provide for the dangers to which the changes of the season may subject them.

The insect is the more to be dreaded from the fact that the injuries it inflicts are of a permanent character, and can never be fully repaired. It is, besides, so insidious in its operations, that the damage is mostly done before any but a practiced eye becomes aware of its presence. Its eggs are deposited in the crevices of the bark, and when hatched, the larva make their way inwards, leaving the bark untouched, which so far retains its fresh appearance, as only to betray to a practiced and observing eye the destruction going on beneath, until made manifest by the frosts of winter. A practiced observer, however, will not fail to discover, on close examination, a slight difference in the color of the bark, which will be slightly elevated, over the injured locality, and also somewhat yielding under pressure. On removing it, the wood beneath will be found to be entirely eaten away, and its place supplied by the fibrous powder excreted by the insect. This insidious process is sometimes carried on to such an extent as entirely to girdle the tree; in which case it is, of course, fatal; while, in other cases, a decayed spot is produced; leaving the tree liable to be broken down by high winds, or to die from the development of induced disease.

Various means are proposed by different writers, to check the depredations of this insect; some of which, it is to be feared, are based upon an imperfect knowledge of its habits. From the fact that the beetle is nocturnal in its habits, some have recommended the lighting of bonfires in the orchard, in the evening, into which they are expected to fly and be destroyed. Lighted lamps are also recommended to be hung up in the orchard, each with a dish of oil or soap suds beneath it, into which they will be decoyed to their destruction. These processes are liable to objection on the score of expense, as they must be kept up for several weeks; while, with the former, we can have no proof that the object is being effected. Indeed, they are supposed to be recommended on account of the known habit of nocturnal insects to gather about a light, rather than from any evidence of a definite character.

To prevent the deposit of the eggs, a wash is recommended, concocted of a pint of sulphur, a gallon of soft soap, and enough tobacco water to reduce the whole to the consistence of paint. It is also recommended to inject this preparation into their holes by means of a syringe. This is doubtless a dose they find "hard to take," and they will, therefore, give it a wide berth. It will lose its strength, by exposure to the air, and will be washed away by rains; but, if perseveringly renewed, its efficacy can hardly be doubted.

The late A. J. Downing recommended the plugging up of their holes with pieces

of soft pine, dipped in tobacco water, to prevent the escape of the perfect insect. The writer has tried this process, but the insect showed his contempt for such restraint by boring a nice round hole through the bark in another direction by which to escape,

Dr. Harris recommends to insert bits of camphor gum into their holes, plugging them with soft wood, to confine the odor, which is believed to be fatal to them. Others recommend to kill them by inserting a flexible wire into their holes, but it is believed that those two modes of destruction will generally prove futile, from the fact that, when the larva has once effected a lodgment, few cultivators are observing enough to detect him until the ensuing spring, when the discoloration of the bark will betray him; but, by this time he has worked so deeply into the wood, with so many turns by the way, and has also packed the hole behind him so firmly with excrement, as effectually to bar the way against all such attempts.

Mr. Downing (Revised Fruits, page 63) recommends placing about the trunk of the tree, early in the spring, a small mound of ashes or lime, apparently for the purpose of protecting the collar of the tree against their attacks. The writer is compelled to suppose that the habits of this insect, at the East, warrant such a recommendation; but here, where its attacks are generally made above the reach of such a mound, it must necessarily prove ineffectual.

The attacks of this insect are not confined to the apple, as it appears entirely at home in the quince, as well as in the mountain ash, and, in one instance, the writer extracted a thriving specimen from the trunk of a *Duke Cherry*.

In the war upon this enemy, the adage, "an ounce of prevention is worth a pound of cure," applies with peculiar force, inasmuch as the evil, once inflicted, can never be fully remedied.

A careful study of its habits will establish the following facts, which if properly and vigilantly acted upon, can hardly fail to secure exemption, to a great extent, from its attacks.

It seldom attacks healthy, vigorous trees, but prefers those that, from being recently transplanted, or from neglect, have become weak or stunted.

When trees are trained with tall, naked trunks, exposed to the scorching rays of the sun, the bark becomes thickened and comparatively inert, and especially so, when the tree leans so as to receive the direct rays of the sun during the hottest part of the day. This furnishes an inviting field for the operation of the borer, as is shown by the destruction of large patches of bark, producing what are commonly called "sun scalds," but which a closer examination will invariably show to be the work of this insect.

After a careful study of the remedies proposed, and with some observation of the habits of this worst of all enemies of the apple tree, the writer would recommend growers to rely upon the following, as the most effectual remedies and preventives. Scraping off the rough bark, and washing the trunks and larger limbs with the preparation given above or with soft soap, or even lye, as often as necessary to keep up a coating of these substances during June and July. The frequent examination of the trees, and the cutting out of such as may gain a foothold. Constant vigilance



to prevent trees from acquiring a lean in any direction, and before and above all, the training of trees with heads not more than from three to five feet from the ground.—T. T. LYON, in *Michigan Farmer*.

### COCHINEAL—THE CACTUS A SOURCE OF WEALTH.

WE all ought to be ready at any time for the sober consideration of even the most trivial suggestions regarding the development of our countries resources. The man who makes two blades of grass grow where only one previously flourished is said to be a benefactor of the human race, and he who has shown the world, through the Paris glove manufacturers, that monkeys are good for something besides chattering, may probably be placed by those whom it benefits, in the same category; even Timothy Dexter, with his curious speculation in warming-pans and jack-knives, is probably at this moment highly venerated by the aged inhabitants of the West India Islands.

After considering this, we hope we shall not be despised for introducing to the citizens of southern California a little harmless insect as an element of their local prosperity. We refer to that insect, which, when dried, forms the cochineal of commerce extensively exported from Mexico since even the year 1518, to all parts of the civilized world.

The plant serving for its food and the only vegetable on which it can subsist, is known to scientific men as the *Cactus opuntia*, a native of Mexico, and one of the hundred varieties of the cactaceous tribe not indigenous to California, but capable of ready acclimation. They are found in thousands upon this plant, and when their bodies are fully distended by its extracted juices, are shaken into pans of water for the purpose of killing them, and afterwards dried upon cloths. They are so minute that it takes seventy thousand to form one pound. Its cultivation was originally confined to Mexico, but within the last fifteen years Texas, South Carolina and Georgia are numbered among the producers on the American continent, and the East Indies and the Island of Teneriffe in the eastern hemisphere. The exports from the United States now largely exceed the Mexican exportation, which is probably owing to the turbulent state of this unfortunate republic; our home consumption probably requires an equal quantity, and thus America is the largest cochineal producing country of the world.

Our sandy plains and gravelly hills that are covered with the spontaneous growth of infinite varieties of cacti, cannot fail to produce, with proper care of cultivation, this particular species; and where the food can be raised there the merchantable insect will as surely be found.

It is not clearly ascertained that this particular variety of cactus is essential to the propagation of this insect; and probably experiments made with the cacti already abounding here, would develop a species as well calculated for its nourishment. M. de Raynal, in his travels, visited the "Nopaleras" or cochineal plantations in Oaxaca,

and ascribes the peculiar color of the cochineal to the red fig on which it feeds. Commenting on this, a late writer states it to be a decided mistake, as the fruit of this cactus is the white tuna.

The cactus producing this peculiar Indian fig is very abundant in all the mission gardens and at many of the ranches of southern California; so, if the writer's word can be relied on, we have at hand the means for a ready experiment. A trial costs nothing; and even its cultivation is pursued for a mere trifle. The cacti grows without irrigation, and the only expenditure of labor is at the time when the animals are collected—every two months—in the manner above described, and with no preparation, are ready for market immediately.

The yield, of course, depends on the size of the plant and many governing circumstances. For plants that have attained their height, unpropped, and have been carefully trimmed, they would average ten to twenty pounds, as the annual yield, worth, according to the quality, from one dollar to two dollars and fifty cents per pound; a handsome return for a small investment of capital and labor.—*San Diego Herald*.

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#### SELECTION AND PREPARATION OF SEED.

THE first prerequisite to proper seeding is the selection of good seed. This involves several important considerations; among which variety, perfect development and full maturity, perfect soundness and health of the germ, and freedom from the seeds of all other plants than the one in question, are prominent.

THE QUESTION OF VARIETY, Can only be determined after a careful investigation into the character of the climate and nature of the soil; and these investigations must be experimental, not merely speculative. Thus, of the different varieties of wheat and Indian corn, there is a great diversity of opinion even in the same neighborhood, when there is but little difference in the quality of the soil and none in the character of the climate—a diversity more dependent, probably, upon the style of preparation and mode of cultivation than any other circumstance, and not, therefore legitimate as evidence of their relative merits. In cases of this sort, we can give no better general advice than that each cultivator test the matter for himself by actual and repeated experiments—experiments which shall determine the adaptedness of the several varieties to the length of the growing season, to the severity of the winter, if intended to be sown or planted in the fall, to the droughts of summer, the probability of their escaping the ravages of insects, and the various diseases to which plants of their class are liable, etc.

Many intelligent farmers are of the opinion that an occasional change of varieties is essential to the continued health and productiveness of the crop, and are therefore accustomed to import their seed from neighboring districts, or remote sections of the country, lest their land become weary with growing the same old sort for years in

succession. That such changes may result advantageously sometimes, is highly probable; indeed, we are all familiar with cases in which the benefit has been marked. But the reason is probably quite different from the unphilosophical one assigned by the farmer, who by his fancy endows the soil with all the caprices of the human heart. It can hardly be ascribed to the difference in the chemical composition or physiological characteristics of the different varieties, on the principle of the *rotation of crops*, since the composition does not materially vary in the several cases. To what, then, is the improvement due? Evidently to the circumstances that the first was all the while faulty in its adaptation to the soil or climate of the region, or to the fact of its degeneracy by defective cultivation until the seed preserved is no longer able to produce a perfectly healthy plant.

This last circumstance—that of degeneracy, through inadequate cultivation—is probably the chief cause and may justly be charged with four-fifths of the abortions which characterize the agriculture of this country. This leads us to speak, in the next place, of

**THE PERFECT DEVELOPMENT AND FULL MATURITY OF SEEDS.**—No sane farmer could ever expect to raise fine stock of any kind from inferior, unsound or diseased parents; the idea is preposterous, and contrary to all known physiological law. The history of the human race is equally refutive of such a theory, and has made oft repeated and fearful demonstrations that the hereditary law is as inexorable as fate. But this law quite as truly and completely controls the vegetable world as it does the animal. A healthy and vigorous plant, capable of perfect development and maturity, was never born of a diseased or otherwise imperfect germ. This principle cannot be too strongly enforced, for none other within the whole range of agricultural science is more frequently ignored in practice.

If the farmer would plant potatoes, he first selects out such as are fit to eat or will bring the highest price in the market, and the remainder, the smallest and half rotten ones, he heaps up by themselves as *seed*. The result is just what should be expected—a meager crop of diseased tubers, hardly worth the cost of planting. And the world folds its hands, repentant in view of some national violation of moral law, and impiously talks of the dispensations of a mysterious and divine Providence! If he would grow wheat he is not content with utterly neglecting the due preparation of the soil, but is equally reckless in the selection of his seed, satisfying himself with such as he may have left over from a preceding inferior crop, or with such as he can purchase at the lowest possible price of some chess-growing, smut-producing, weevil-feeding neighbor. And so of all the crops ordinarily grown by the farmer.

We repeat it, *good crops can only come from good seed*. In making choice, it were better that the selection be made directly from the field, where it is always easier to determine the relative value of different portions of the crop, and that of such selected portion only the most perfect seed be saved, even though a considerable amount of care be requisite. No labor could be more economically bestowed, and no well-founded expectations of a good harvest can be rationally entertained without



such care. In the olden time, when the seed-grain was gathered with the sickle, carried by itself to the barn, threshed by the hand so as to beat off none but the most perfect kernels, and, after careful winnowing, was thrown across the floor with a shovel, against the wind, and then again assorted, only that which was the heaviest, and therefore fell the farthest, being preserved for that purpose; when, if the farmer was unfortunate and without such grain as he would be pleased to sow for a future crop, he scoured the whole country until he found some one who could supply him—in those times there was less talk about chess, smut, the rust, the weevil, the chinch bug, the midge, and Hessian fly, than in these days, with all our boasted progress in the art of agriculture. Of course we have no desire to fall back into the “good old times” when the crooked stick for a plow, the sickle, the flail, and the hand-winnow, jounced upon the thigh, were the instruments of husbandry; but we do insist *that the old carefulness be restored*, and that the progress of the mechanic arts shall not deceive the farmer with the vain hope that the time has come when the physiological laws of the plant and the slow, noiseless forces of nature may be entirely set aside for patent methods and new-fangled machines. The last are good helps, and we glory in the age which has produced them; let us thank God for them, but not stultify ourselves by condemning the methods of nature.

But it is not enough that the seed should have had a perfect development and full maturity; it must also have a

**PERFECT SOUNDNESS AND HEALTH OF THE GERM,** At the time of planting. In other words it must have been perfectly preserved. This point likewise requires emphasis and reiteration; for many of the failures are solely attributable to neglect of this important matter.

Wheat and other grains not unfrequently spoil in the granary, though perfect when harvested, in consequence of being stored in large heaps when partially green, or damp; and sometimes the germ is killed by the frost. Corn suffers from the cold, and on that account should be thoroughly dried before being put up to keep. The old-fashioned way of selecting from the field the best and earliest ears, braiding the husks together and hanging them up in the garret to dry until spring, is about as safe as any, and such seed rarely fails to germinate and bring forth fruit in due season. If the quantity required be too great to allow of this method, then it should be thrown upon some scaffold floor where there is constant and free access of air so as to thoroughly dry before the coming of weather sufficiently cold to freeze the germ.

But heat and cold are not the only sources of injury to the germ of seeds; the machinery employed in threshing is not unfrequently destructive to them, as no one can fail to appreciate who will note the proportion of seeds which, after machine-threshing, are partially crushed or broken. It is on this account that, in another connection, we have urged the propriety of threshing out the seed by hand; whereby it will be possible not only to avoid this danger, but also to leave such grains in the head as are not fit to be sown.

In the fourth and last place,

**THE SEED SHOULD BE CLEANED**—That is, there should be no admixture of the seeds of other plants. The importance of this consideration will be fully appreciated by such farmers as have had those noxious and almost ineradicable pests, the daisy, the Canada thistle, etc., etc., introduced upon their lands, through foreign importations; while comparatively few have entirely escaped the annoyance of some kind of weeds.

When perfectly pure seed cannot be obtained, there are three means of cleaning, some one of which, or altogether, should be employed without stint of care or labor. These are, first, screening through well arranged fanning-mill sieves; secondly, throwing the seed with a light shovel, or at least in small quantities, across the barn floor, saving only such as shall fall farthest from the operator, as suggested under another head; and thirdly, washing with water. This last is most effectual and may be easily done by putting the best cleaned seed into a vat of water and continuing to stir and skim off, until the noxious seeds, which almost without exception will be lighter than the grain to be cleaned, have risen to the surface. It is hardly necessary to add that, after washing, the grain must be spread out in an exposed place and as quickly dried as possible.

**PREPARATION OF SEED.**—The soaking of seeds in simple warm water, with a view to facilitate the sprouting, has, to some extent, been practiced from time immemorial—sometimes rationally, but often with injury to the seed, and of course to the future plant. If the soil be exactly in the right condition, as to temperature and moisture, and the season be too far advanced, there can be no question of the advantageousness of such a process; but if the soil be warm and dry—in which condition the process is more commonly used—the quickly sprouted germ will be in danger of perishing before sufficient moisture is furnished to the surrounding earth to sustain it. Usually it is safer to omit the soaking altogether; and the only cases in which it is admissible are, first, that in which the season is late and the moisture in the soil sufficient to sustain the young and tender plant; and secondly, where, though the earth be dry, a fall of rain is confidently expected immediately after sowing or planting. But inasmuch as rain can never be anticipated with absolute certainty, this second case will hardly constitute an exception to the general rule of inadmissibility.

In addition to the mere soaking for the purpose of hastening germination, it is also common to use a variety of chemical substances with a view either to stimulate the growth of the young plant, or to prevent the ravages of depredating insects and animals, or of some of the diseases to which the plant in question may be liable.

*Of the class of chemical agents used to stimulate the growth of the plant*, common salt, nitrate of soda, lime, wood ashes, saltpetre, nitric and sulphuric acids, were formerly in common use. And while we do not question the effect, we nevertheless doubt the philosophy of this practice; for the reason that forced growths of plants which ordinarily need a whole season for their development, and are required to perfect their seed for the perpetuation of the species, are necessarily weak and unhealthy. If the soil contains the needed elements, and is properly prepared, there can be no need of

using means of stimulation; and, if these conditions of the soil are not present, then such means will avail nothing and may even do harm, if indeed, they produce any result at all—which we are disposed to question in view of the facts that the germ is fed in the first stages of growth by the store of food contained within the seed itself, and that the amount of stimulating substances adhering to the outside of the seed is but trifling at best, and moreover in a situation not to be available for the little rootlets, which feed beyond the particles which immediately surround the seed.

*As preventive of disease*, particularly of *smut and caries*, lime, common salt, alum, copperas, blue vitriol and arsenic are recommended; though the accounts are so conflicting that they can hardly be relied on with great confidence. Nor in those cases in which beneficial effects have plainly appeared to follow is the *rationale* determined.

Among the best preventives of which we have personal knowledge, we feel warranted in recommending the following—wishing it distinctly understood, however, that in nine cases out of ten we are able to trace the disease to some fault of the seed, or the method of cultivation.

1. *Lime*.—Into a vessel of tepid water—some prefer urine—throw as much seed as, when stirred, will allow the lighter grain to rise to the surface that they may be skimmed away; dip out, spread upon the floor and sprinkle thereon freshly slacked lime, in the proportion of about one bushel to twelve; stir with a shovel until a thin coating of the finally pulverized lime adheres to every seed, and leave for about ten hours; stir again, and finally spread in thin layers to dry. Ashes, gypsum, etc., may be used in like manner.

2. *Blue vitriol*.—One or two ounces, to the bushel, of this salt of copper, dissolved in as much water as may be necessary to thoroughly wet the grain, has been so often declared a preventive of smut by careful and reliable experimenters, that we acknowledge to a considerable degree of confidence in its value. The wheat, when once wet with the solution milk-warm, should be allowed to steep for about one hour, and then spread out in an airy place to dry.

*To prevent the depredations of animals*, such as gophers, squirrels, mice, and various worms, it has been proposed to steep in solutions of arsenic, copperas, etc.; and some have claimed that the smoking of seeds would prove sufficient. There is but little doubt that the arsenic, if used liberally, will disturb the digestion and consequently impair the appetite of the depredating animal; but to make it sure will involve a considerable expense and the risk of more valuable life.

Saltpetre is also recommended; and some are in the habit of soaking in tanner's oil. Turnip seed particularly, is often treated in this way, and it is maintained that the plant escapes the fly as a consequence. But we have already devoted more space than we intended to a branch of the subject, upon which we are able to furnish but little information. It is really important as a field for investigation, and we trust that some simple and harmless compound may yet be discovered or manufactured which shall exactly and economically meet the necessities of the case. We have no doubt of the practicability of the thing, and would urge the farmer to keep trying until it is done.



## CLIMATIC EFFECTS.

*Editor Culturist:*—Your October number contains allusions to the differing temperatures of our season. I have kept no record of meteorological data; yet, from all that is apparent from the growth and ripening of fruits and vegetables, this has been the coolest season since 1853. My position is at the western base of the Sonoma mountain, and about twenty miles from the Bodega inlet, through which, and over the corresponding depression in the outer mountain range, the sea breeze drives the fog over the Bodega and Petaluma region. Usually the fogs have been just sufficient to modify the heat and perfect the potato crop; rarely are they deficient—this was the case, however, in 1856. This season we have had an excess of fog and cool north-west wind. Tomatoes, in exposed situations, did not begin to ripen before the middle of September, and some of my winter apples have not come to their usual size or color. Our northers are our hardest winds and do not usually blow before the middle or last of October; yet this season, or on the 23d of September, we had a norther which blew down most of my peas and winter apples.

I conclude that our seasons have been subject to a diminishing gradation as to temperature since 1853, though the gradation may not have been serially regular. In 1853 and '54 the American peaches did not curl at all, and in this respect were thought to differ from the California peach. The atmosphere was charged with more electricity then, than since. In August or September, 1853, heavy thunder with rain occurred in the western portion of Sonoma county. Rain above an average fell during the winters of 1852 and '53. It has been asserted—the assertion being based on California experience—that maximum rainy seasons occur at periods of five or six years. If this be so the cycle is finished and we should expect a very wet winter shortly.

I conclude that maximum rainy winters are followed by warmer and more growing summers, yet this will not be the rule but the exception; for in all the coast region lying under the fog and sea breeze, or where the oak trees are inclined in growth, we must expect cool seasons as the rule. In such position we must not expect to succeed well with the peach, apricot, grape and late figs, unless it be in the deep, narrow valleys laying in the lee of the foot-hills, where they ripen much better than in exposed situations. As to the peach curl, none doubt that it is caused by continued cool fogs or moist atmosphere. I have seen all in a lot curl except those standing in the lee of a dwelling house. The varieties with thin leaves are subject to curl; the thick leaved kinds, like the almond and apricot, do not curl. I suppose no remedy can be applied; our resort is to plant only those thick leaved kinds, as the President, Snow and some others that do not curl. Plants perform their breathing function through their leaves; thus, with its attendant evaporation, is checked by a cool, moist atmosphere, the functional vessels become replete with sap and are ruptured or protruded by the capillary force, or it is the equivalent of vegetable consumption induced by suppressed perspiration. I have observed partial curl in the tender leaves of young trees.

Other causes than climatic may modify the ripening period, as in the case of the Bartlett pear mentioned. Any cause that stimulates the wood growth of trees, tends to retard the ripening process of fruit; so that irrigation at Los Angeles and Sacramento may protract the ripening period beyond that of Alameda without irrigation, and with artificial or natural protection. With age and full bearing the ripening period is shortened.

C. M.

### CHINESE SUGAR CANE IN GEORGIA.

"I LAST year planted fifty or sixty acres, and shall this year plant near an hundred acres. I have planted it on every kind of land I cultivate from the middle of March to the middle of July, and on land so much exhausted that it would not pay in any of our usual crops, and everywhere and on every acre, I have made a better crop than I suppose I could of anything else. On wet or dry land, rich or poor land, it grows better than anything else I plant. I have fed it without stint to my stock, hogs, horses and cows, since the first of last August, and now the cane is not so dry but what the stock will eat it. I think it more valuable for hogs than any food I have ever fed to them; and without increasing my grain crop, it has changed the character of my farm from a provision purchaser to a pretty large provision seller. I think I could sell from my farm this year \$1,500 or \$2,000 worth of provisions, and then have a plenty for my family and stock. I last summer fed the seed to my work stock, with fine effect, and I think I have now seed enough for half the necessary food for my plow force this summer, and some of our poultry hens are so fat that they have to waddle across the yard. I expect, for the future, to make it about half my forage crop. I have found it healthy for everything that has used it, and would be willing to show stock condition with any kind treated in the usual farm way of this country.

I have made sirup from it for two years; last year, 1,300 gallons and consider it equal to any I have ever purchased; none soured, but all more or less granulated sugar. With an expenditure of about one hundred dollars we can make, with our hands, at a leisure season of the year, from fifty to sixty gallons per day; and then the seed and the fodder is worth as much as the same amount of land cultivated in corn for stock. It will grow finely on land run down in corn and cotton, and I am now inclined to think it will be found valuable as a *rotation fertilizer* for our lands. *Mark that idea!* I am satisfied I can grow the same amount of stock forage in the sorgho for half the expense I can grow it in corn or oats, and I now think I shall use it as fully half my food for my stock on the plantation, and to the advantage of my stock. I experimented with seven kinds of Imphee last year. I got the seed from Gen. Hammond, and found it so inferior to the sorgho, I have fed my seed away to my stock to prevent its mixing."—*South Countryman.*

## WHITE MEDITERRANEAN WHEAT.

THE practical experience of some of the most extensive as well as successful wheat-growers of California, during the past five years, has gone far in establishing the truth, that there is a great difference in the relative value of the different varieties of wheat cultivated upon grounds of like character. That almost any varieties or all of them will succeed, to a certain extent, upon any of our soils adapted to wheat culture, require no further proof; but that some of them succeed much better than others, is clearly certain. It becomes a matter, therefore, of the first importance, to be able to determine the preferable varieties without the necessity of experiment on the part of any culturist, as such experiment can only be attended with loss as regards some of the varieties. It would, therefore, be a matter of great value to the wheat-growing interest of the state, if the farmers from widely different localities, possessing soils of varied character, would disseminate such facts as their experience has put them in possession of, touching the relative value of the varieties of wheat cultivated in their respective districts.

In answer to our inquiry, as to the best variety of wheat for cultivation upon the generality of soils in Napa county, having reference to steady annual yield, freedom from smut or disease, we have received the following from a gentleman of acknowledged experience and observation in this department of agriculture, S. Thompson, Esq., of Suscol. He says: "The White Mediterranean wheat has proved to be one of the best, or the best variety grown in this part of the state. It will produce, on the same land, at least one-third more than the 'Sonora,' and is not liable to smut. Care should be taken in procuring—if for seed—the genuine variety, as there is a spurious article upon the market by the same name. The genuine variety was originally obtained through a reliable source, direct from the Mediterranean, in 1854, and has been reproduced until now it can be obtained in quantity sufficient for extensive seeding. Repeated experiment has shown its flouring qualities to be fully equal to the best of other varieties, and far superior to many of them. I consider it a matter of the first consequence that all seed wheat be entirely free from barley, radish or mustard. The genuine White Mediterranean, as far as yet cultivated in this country, has been kept pure from all foul seeds whatever, and its superior fitness for general cultivation, should recommend it to the attention of the wheat-growers."

We are in possession, at our office, of a sample of the above named variety of wheat, which we are desirous to show to those who may wish to cultivate a valuable and reliable grain, without waiting to experiment in order test its perfect adaptation to California soils and climate. Any information beyond what we have given above, in reference to this valuable cereal, its general habit of growth, time of ripening, and where it can be procured, can be obtained by addressing S. Thompson, Suscol nurseries, Napa. We deem it a matter of the utmost importance that the agriculturist, whose main reliance is his wheat crop, should sow none but the best seed; and it is for this reason that we have here introduced to notice a variety that has never failed in California soil.



## IRRIGATION vs. BORERS.

**D**URING the past year, and from different sections of the state, we have heard frequent complaints of the unwelcome ravages committed by the borer, upon the newly set orchard trees. In most places, the apple seems to be the most liable to attack, but the pear is not unfrequently the subject of its ravages. We have taken considerable pains to endeavor to determine the condition of trees the most liable to this pest, if possible to apply with greater certainty some specific remedy or preventive. In answer to inquiries, directed to several practical and observant culturists, relative to the habits of this orchard pest, we arrive at the following conclusions, as the result of their observations.

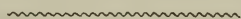
That trees kept in perpetual thrift, with a rapid growth, are seldom attacked, or not as likely to suffer as those that receive a decided check at the time of transplanting to their orchard position; that trees in close nursery row, are seldom if ever attacked; that trees cultivated with low and branching heads, by which the bodies are shaded from the direct rays of the summer's sun, are almost entirely exempt; that almost invariably it happens that those trees which, from a defective growth or development, seem the least able to sustain themselves from attack, are almost certain to be the sufferers; that a small, slender and leafless bodied tree, particularly in a dry situation, is always a fitting subject.

From the foregoing, which we collate as the experience of others, we are inclined to believe that, as a general remark it is true, the destruction by the borer is more the result of an unnatural condition of the tree, the effect of improper management, than any inherent liability or necessary attachment upon their culture. One gentleman remarks that, out of sixty trees set upon exactly the same soil, he was able, from their position, to irrigate about fifty of them only, ten being above the line of his ditch; they were all set on the same day, received equal care from the time of setting till midsummer, except in the matter of irrigation. That those which received a sufficient supply of water, to promote a rapid, vigorous growth, but a single tree was attacked by the borer, and even in this instance high among the limbs; but that of the ten trees receiving no artificial watering after the day of their transplanting, seven of them suffered more or less from the borer, whilst five of them were entirely ruined.

Now it is apparent in this instance that irrigation, or the presence of water about the trees acted as a preventive of the borer's attacks; but whether from the greater luxuriance induced in the irrigated trees, or a dislike of the enemy to moistened ground, is perhaps not clearly established. But let it be from whatever cause it may as connected with an abundant use of water, we choose to designate it by the simple term irrigation, and giving it as a clearly established fact, that its practice is one of the best preventives known.

On page 244 will be found a well written article upon this subject; and as it is one that cannot but interest the growers of orchard trees, wherever subject to this destructive pest, we recommend it to careful perusal. That other preventives than

irrigation can be devised that, in a large majority of cases, can be made available is to some extent true. Where the attack is made by the deposit of the egg, and subsequent first operations of the larva upon the body of the tree near the surface of the ground, the simple hilling up of a small quantity of lime or ashes around the body of the tree in the months of April and May is a perfect protection, but as high up only as it reaches; whilst to inclose the tree with a wrapping of any description of cloth, from the ground upward, is a still surer device, and as it can be extended without much trouble or expense quite up to the limbs, it is one of the most available of the few effectual preventives. We have always found that the application or presence of coal tar, obtainable at gas-works, is one of the most certain of all the many applications made to drive away every species of noxious insects; but it should never be applied to the body of the tree or its bark, but upon any description of wrapper that may inclose it, either leather or cloth. A thick paste made of soap and ashes, spread over the body and larger limbs of the tree, has been found equally available as long as it can be kept in place; but the growth of the tree and its consequent expansion, soon renders this or any similar application, but partly serviceable, owing to its liability to crack, exposing portions of the bark to the attacks of the borer for the deposit of its eggs. If, however, it should be proven, that a full and frequent watering of young orchard trees, effecting a rapid and vigorous growth, by which the bark is kept smooth and healthy, is a preventive of the borer's ravages, it is another strong argument to be set down to the credit side of irrigation.



## HORTICULTURE OF THE FOOT-HILLS.

**N**EARLY every first effort at horticulture in California, was made in the lower valleys, from a belief that there only could be found a sufficiently moist soil for the sustenance of vegetable life during our six months' absence of rain; and, after several years of experience had clearly demonstrated by their little isolated patches of successful culture of fruits among the foot-hills, their perfect adaptation to the growth of all the finer orchard and vineyard products, there were but few so sanguine of certain success, as to engage in anything like an extended fruit culture among the mountains. The few cases, however, of successful culture that did occur, were in themselves so extraordinary, as regards the size and excellence of product as to induce, for the first three or four years afterwards, a gradual extension of effort in that direction, that proving alike successful, has led the way to an increase of the more easily produced fruits, till now the mining districts, to a very great extent, are no longer dependent upon the lower country for their supply of fruits.

And not only are the soils and climates of the mining districts equal to those of the lower country in the quantity produced, but the fruits, in very many instances, are decidedly superior in quality. The peaches of Coloma, in El Dorado county, have ever been famous for size, beauty and excellence, and the culture of this fruit has so rapidly increased among the mining towns, that now it can no longer find a

market in its fresh state. We have ascertained, from a perfectly reliable source, that the product of brandy from the peach alone, during the past season has exceeded three thousand gallons, in the district comprised within a radius of six miles around Columbia, in Tuolumne county. And in addition to the peaches required for this product, an immense quantity has been dried.

Vineyards also are being rapidly extended in every part of the mining districts, high and low, along the valleys and ravines and upon the hillsides, wherever irrigation can impart its life-giving incentive to the newly planted vine, there we see vineyards which, though but the nucleus of what the future will present, have already established by their abundant produce and unequalled perfection of berry and quality of juice, the fact that the finest wines of California will be those of her more elevated districts.

The complete adaptation of the different varieties of foreign grapes to successful open ground culture, has given an immense impetus to the wine, or vine-growing business; large numbers who had planted a few vines of the foreign varieties, are now anxious to extend their culture to the utmost limit to which cuttings are attainable; and such is the demand and desire to multiply as rapidly as possible the best varieties, recourse will be had to the production of vines from single eyes or buds, and the engrafting of the same upon native or other stalks. The complete success that has everywhere attended the introduction of the vine and the making of wine of a very good quality, with but little or no previous experience in the art of wine-making, has induced numbers to invest considerable sums in the purchase of some of the best vineyard lands in the state, for the purpose of improvement during the next and subsequent years. Almost to a man, we find among those of our mining population who have made up their minds to stay, a desire to possess sufficient ground to plant a vineyard; and the fact that a single vine will furnish many pounds of the richest clusters, even though trailed perhaps to the only support that can be found secure from molestation, the frontal of his cabin, we find everywhere a desire to possess a vine.

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### VINEYARD PLANTING.

*Editor Culturist:*—I wish to set, during the approaching winter and spring, at the proper time, fourteen acres of hill and hillside land to vineyard. My soil is rich, has been twice deeply plowed, and is, in every respect, well fitted for the reception of the vines; but as it has a southern or south-western exposure, receiving the fullest heat of our summer's sunshine, with no facilities for irrigation, or watering, the question of, to plant or not to plant the rooted vine, is one I wish you, or some of your correspondents who has had practical experience in the matter, would answer. From previous numbers of the *Culturist*, I am well aware that you have not taken strong grounds in favor of hill or hillsides for vineyards, without some aid from irrigation; but when I see so many beautiful oaks, perfect trees, growing upon adjacent hilltops



with even a much greater elevation than the grounds I have chosen, I cannot but believe that the same soil will grow a thrifty, and doubtless a productive vineyard. How it should be planted, and with what varieties of grapes, for the manufacture of the choicest wines, is to me not quite so clear, and it is upon these points that I would like to receive enlightenment. What is your opinion of the Catawba and Isabella varieties in a California soil and climate, for the production of wine? or where can one year old vines or cuttings of those varieties be obtained in quantity? and are you still in favor of long cuttings over short ones, to be planted where they are to remain?

Yours, M. C.

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We really hope, in answer to M. C., and the gratification of numerous readers of the *Culturist*, that some one or more of our correspondents who may have had experience in the culture of the vine upon a California hillside, with a southern or southwestern exposure, and no means of irrigation, would give the result of such experience, and if favorable, their mode of planting and after treatment. We have never yet seen a vineyard of fourteen acres, or five acres, upon such lands as our correspondent describes, a hilltop and sides, exposed to the fullest blaze of our summer's sun, and no means of irrigation; nor have we ever heard of its existence anywhere in the state.

We have very little faith in the establishment or growth of a vineyard in such a situation, either with rooted vines or cuttings, unless the season of planting should prove unusually propitious, which would be one in which the rains of winter were abundant with continuous heavy wettings quite into summer. Such a season might enable the roots of newly planted vines, to strike sufficiently deep to carry them safely through the dry months; but as seasons of this description are rare, we should hesitate before embarking in a speculation, involving the cost incident to a fourteen acres vineyard of rooted plants, at present prices. Not that our faith is in any degree stronger as regards the success of cuttings, over rooted plants for such a situation; but only that, if used instead, the cost would be far less, and in case of a failure, proportionably less disastrous to the purse.

Because there are "beautiful oaks," occupying the tops of adjacent hills, we deem it but a doubtful guarantee of the success of a vineyard there, unless propagated and grown something as the oaks were. But the oaks have hardly a root for the first twenty inches below the surface of the ground. Is it possible to grow vines in the same way? Were the oaks, now growing in such beautiful luxuriance, ever transplanted trees, with roots occupying the surface soil as the roots of transplanted vines must do? If so, where are those roots now? If the same process is pursued in planting a vineyard or the orchard tree, upon our unirrigated hills, as nature pursued in planting her oaks, doubtless a similar success might attend their planting; but until this is done, the same results are by no means certain.

Upon fourteen acres of hill land, in good condition, and the rooted vines set with care, doubtless a large number would establish themselves, with the aid of proper culture; but still larger numbers, amounting to a successful setting would be the

result, if a judicious irrigation of the vines, for the first and second years, could be secured. The same remark will apply equally to cuttings; if they can receive occasional waterings, they are almost sure to succeed in numberless instances, in which, without such waterings, would nearly as certainly fail. If cuttings are to be used upon unirrigated hill land, instead of one year old rooted vines, then would we recommend the use of long cuttings over short ones, as more likely to succeed—the greater depth securing a degree of moisture to the cuttings for a longer period into summer.

In regard to the varieties of grapes best adapted to the manufacture of the choicest wines, very little can be said with absolute certainty, because the same varieties differ widely in their qualities, in different soils and localities. That almost any of the best European sorts will produce wine in California, equal to the most favored wine districts of the old world, hardly admits of a doubt, when the grapes are admitted to be both in size and flavor, certainly in all cases equal, and in not a few, decidedly superior. With the two native varieties, the Isabella and Catawba, and their properties as wine grapes, we are familiar, from personal experience, having made wine from both, mixed and separately.

In our judgment, the Isabella is not a good wine grape, apart from the fact that it is at least two weeks later in ripening than the Catawba. Mixed with the latter in proportion not greater than half, and the product is a fair wine, and to many tastes, it is a better grape for the dessert than the Catawba; whilst the latter everywhere, is a more regular ripener upon the bunch than the former, and a more certain bearer, and is, without a doubt, our best native grape for wine, though by some considered inferior to most foreign varieties.

Were we asked our opinion as to what one grape we would select, as the most likely to prove a superior wine grape among both native and foreign, in all localities and exposures, with the least attendant risk to the planter of a vineyard of considerable extent, we should say the Catawba; because we know it to be a very productive variety, and with proper management, good wine can always be made from it. And yet some foreign varieties may prove superior. In answer to M. C., as to where the Catawba can be obtained, we can only refer him to our advertising pages.

Should any one of our now numerous readers, have had any experience in the culture of a vineyard of any extent, upon a California hilltop, where irrigation is not available, and where the soil is not moistened by springs, if he will communicate his experience for the general good, he can have the satisfaction at least of knowing that we consider him a public benefactor.

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**CANDLES FROM LARD AND OTHER SOFT GREASE.**—To twelve pounds of grease add one pound of <sup>\*</sup>saltpetre and one pound of alum. Mix and pulverize them and dissolve in one gill of boiling water. Pour this into the lard or grease when nearly melted, stir the whole while heating, and skim off the scum that may arise. Keep the mass simmering until the water has entirely evaporated, then use as tallow for candles.

## IRRIGATION—WHEN AND HOW.

*Editor Cultivist*:—The question now is, are artesian wells a *bore*, and “irrigation worse than useless?” In your September number, you gave us some excellent hints on irrigation. You say “it is abused and injury sustained, from a want of a proper knowledge of its right application, and particularly as regards the proper time, the quantity of water, and the mode of applying it;” again, “you say two waterings at the proper time and in the proper manner are all that is necessary.” Now, my dear sir, this is the very thing we all want to know. You will confer the highest favor upon very many of your constant and watchful readers, if you will give us the right time and proper mode of applying water; and, like Captain Cuttle, “when found, make a note on’t.”

I am in favor of irrigation, but not to the extent that some would carry it. Having the care of some five hundred young fruit trees, I kept up a continual watering from the first of June until the first of September, every ten days, with the exception of one tree, it being watered but four times during the summer—there is no perceptible difference in it from the rest. I would also ask your opinion of the propriety of whitewashing trees as a preventive to borers; I have tried it, and think it is very injurious; have also tried potash and with signal success. I would make one more remark about water; what I have used all summer, was cold spring water, to the great detriment of a splendid lot of squashes; they, in consequence, were struck with sun scald. Your answering the above queries would much oblige very many of your readers in this vicinity, and particularly Your very humble servant, etc.

NEVADA, NOV. 10th, 1859.

OLD HURRICANE.

That an artesian well is a “bore,” we have never for a moment doubted; and that the “bore” extends downward is equally true; but that it ramifies from thence to all parts of the country, till it reaches every lagoon, lake and mountain stream in the state, as a cotemporary would have it, or that “irrigation is worse than useless,” we very much doubt. In regard to the time and mode of applying water to the best advantage to the growing crop, much must depend upon the condition of the soil, as regards its power of retaining moisture, as well as the nature of the crop produced. If we were to apply it to nursery trees, or trees newly set in the orchard, having reference to their production of wood rather than fruit, we would not deem it of as much importance, as to the matter of time, as where the trees were laden with fruit.

The main point to be observed in applying water to the young and growing tree, is to see that it be done soon enough after the last of the spring rains, and often enough to cause the tree to continue its active growth unchecked till the middle of August or first of September, depending something on the variety of the tree; as there are some that cease their growth and form their terminal buds much earlier than others; most of the cherries have this habit; whilst the peach often continues its growth, if supplied with sufficient moisture, till checked by autumnal frosts. The



number of waterings given, must depend entirely upon the mode of its application and continuance. We would never irrigate nursery or orchard grounds by flooding the surface, but convey the water in ditches, at such distances from each other—depending on the porosity of the soil—as would enable the space between to become fully saturated upon the surface, within twenty-four hours after the water was turned on. Then continue the water for two or three days constantly, but no faster than the soil can drink it all in, without flooding the surface, and until complete saturation of the soil is effected.

Three weeks or an entire month may now intervene before the next watering, which should be given in the same way; and three such waterings are all that are ever required for good orchard soil in any of our driest localities. As to the exact time of applying the first, second and third watering, much must depend upon the time and quantity of the late spring rains, and every culturist must, as he might expect, use his own judgment in this regard, as a difference in time must necessarily arise from mere condition of the soil, and its power of retaining moisture under an unclouded sun and the draft made upon it by the vegetation it bears. The use of cold spring water, upon any soil devoted to the growing of any of the squash or melon family, we can easily imagine might prove injurious if used in excess, because almost all the melon tribe require a warm and dry surface soil to attain to their fullest perfection. Our reason for not watering later than the first of September is, that we would rather give the remainder of the warm and dry season, to the perfect maturation of the wood already formed, than prolong its formation to so late a season as to be injured by autumn and winter frost; for it is clearly established, that the effect of frost, upon the sap of immature wood, is highly injurious to the health of the tree, beyond just merely the destruction of the terminal or the immature limbs. Therefore, to continue the watering of orchard trees, and promoting a growth of wood beyond the season of full maturation, would not be a judicious irrigation.

The constant flooding of the soil, is not what we mean by judicious irrigation, and every attempt to force us into a position that would imply our approval of constant flooding, will be futile, though we do not hesitate to avow our belief, in the wonderful results that are yet to inure to California, from a judicious irrigation of thousands of acres of her broad domain. Our correspondent will find an article on the subject of the borer, as an orchard pest, in this number. In reference to the use of lime, or whitewash, as a preventive of the borer's attacks, we never found it of much avail; nor have we ever discovered that it was particularly injurious when applied to the bodies of trees as a wash, though we never apply it, nor approve of it or anything else that serves to close up the pores of the bark to atmospheric influence. All manner of oils, grease or tar upon the bark of trees is injurious, and if used to prevent the depredation of insects, from a dislike of their odors, they should be applied to strips of cloth or other material, but never directly to the tree. Any description of wash applied to the body of a tree exposed to the direct rays of the sun, should be white, or light colored, never black like tar, as it would be sure to absorb sufficient heat to produce sunscald, on the side most exposed to the sun.

## ART, SCIENCE AND INVENTIONS.

**GOLD FOR JEWELRY.**—Pure gold is never required for jewelry, and is usually alloyed by introducing a small quantity of silver or copper. Silver renders it lighter in color, and copper gives it a deeper shade, inclining it to a reddish hue. The jeweler of the present day relies in a great measure on dies for the forms he gives the articles that come from his hand. These he has cut in steel with care, and many of them are beautiful, and often they are very intricate. The gold is rolled out into strips, and what is beheld is all that it professes to be—pure gold; but the proportion of the metal to the whole is very small. A strip of gold, not thicker than a silver dollar, is secured to a bar of brass of corresponding size, but much thicker in proportion. A flux is applied, to unite the two, and the mass is subjected to the fire. At the proper moment it is withdrawn, and when cool the two metals are found firmly united. The bar is then rolled out between cylinders set in motion by steam power, and this operation is continued till the metal, in the form of a long ribbon, is not thicker than letter paper. It is then cut into small pieces of the size required, and the artizan so places them in succession that the die falls upon each in turn, giving to it the required form. As the die rises, the piece last struck is removed, and another piece is placed over the socket, ready to be struck when the die comes down again. The die is attached to a heavy weight, which gives force to the blow, and it is guided by a grooved framework.

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**HYDROSTATIC SCREW PROPELLER.**—An English paper describes the successful working of a hydrostatic screw propeller, or steamer driven without a shaft. It is asserted that, by the adoption of this invention, all that would be required for the largest ship afloat would be one horizontal cylinder—steam cylinder, placed close to the bottom of the vessel, close to the keelson, working fore and aft the ship, without shaft or crank; and by forcing water through the hollow screw propeller, producing a powerful rotary motion, where only it is required, namely, in the screw, which can, by this invention be driven continuously five hundred or more revolutions per minute; and as the whole is immersed in a constant stream of cold water, there is no possible chance of heated bearings. The water surrounding it on all sides becomes a constant lubricator. The power of manœuvering the propeller from the deck, no matter at what rate the vessel may be sailing, is another peculiarity.

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**COLOR OF THE ATMOSPHERE.**—The general blue color of the atmosphere, and the brilliant and glowing tints of the morning and evening, arise from the different modifications which the different rays of light receive in passing through the air. When the sun is near the horizon, the stratum of air through which the light must pass before it reaches us is greatly thicker than when he is at a considerable altitude. The red rays possess a greater momentum than those of the upper portion of the spectrum, whence they force their way in greater abundance through the resisting mass of air, and penetrate to the earth, while the violet and blue are reflected or

absorbed. Hence the ruddy color of the morning and evening skies. The prevailing blue color of the atmosphere is to be ascribed to the greater facility with which the blue and violet rays are reflected, or from possessing less power to penetrate through the aerial strata. At a great height in the atmosphere, the blue tinge disappears, and the sky becomes a deep black.

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**MACHINE FOR MAKING BULLETS.**—For making bullets from lead wire, a machine has been devised which accomplishes the process of manufacture very efficiently. The wire is coiled upon rests at the top of the machine, and suspended by means of arches, from which the lead is fed downwards into the machine, where it is measured and cut off as required for each bullet; after which it is forced forward into dies, and formed into the desired shape by compression. It makes musket, rifle and pistol, elongated, hollow and conical expansion bullets, also round and shell balls at the same time. At one corner it makes round balls, at another musket, at another rifle, at the other rifle and pistol elongated bullets, each corner being double, with two sets of dies and punches which gives eight bullets to one revolution of the machine. The machine is capable of being worked up to twenty-five turns in a minute, which is equal to two hundred bullets per minute, or twelve thousand per hour.

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**DECADES OF WEATHER.**—Popular tradition seems to have fixed upon certain periods of time for the return of certain kinds of weather. Thus, for example, some tell us that *mild* winters return every tenth year—hence called *Decades* of weather, from the Latin word *decem*, ten, on account of their periodical return ever tenth year. And facts, as indicated by meteorological tables, seem to favor the correctness of this idea as to the regular return of mild winters. Thus, for example, our winters of 1827–8, and 1837–8, and 1847–8, 1857–8 were unusually mild and exactly ten years apart from each other. In the winter of 1827–8 no snow fell in Pennsylvania during the month of January, and the creeks and runs were free from ice—the temperature during this month averaging thirty-nine degrees. In the winter of 1837–8 there was no frost in the ground in December, and no snow in January, the whole of which month was, with the exception of its two last days, nearly as mild as an Indian summer, the medium temperature of the entire month of January averaging thirty-eight degrees. In the winter of 1847–8 the weather was so mild and free from frost, that a considerable amount of plowing was done by farmers, from Pennsylvania all the way up to Maine. But I cannot state the average temperature of January, 1848. In the winter of 1857–8 the weather was uncommonly mild, for the temperature of January averaged as high as thirty-nine and three-fourths degrees, and hence a great deal of plowing was done in our Middle and Northern states. And this, too, contrary to the expectation of many of our wise weather guessers who had previously predicted that our winter of 1857–8 was going to be a very hard, or cold one. And similar cycles or periodical returns of cold winters and of rainy seasons or dry seasons, and of hot and cool summers are also said to exist. But I have seen no clear printed statement of them as yet, and I have no reliable data from which



to prepare any—but would be much gratified if some of your correspondents, who have such data at hand, would enlighten us upon the subject.

**FARMING IMPLEMENTS.**—For the various operations of the farm—plowing, harrowing, sowing, reaping, etc.—the farmer has continual recourse to implements of appropriate character. Of these the standard of perfection is perpetually changing. Our ancestors used a wooden plow whose uncouth outline and clumsy proportions, compared with the modern implement, would provoke a smile of wondering incredulity. But, while men are willing to admit the ignorance of the past and the superiority of the present, in contrast, in these aids to the agriculturist, many forget that their practice virtually denies that there can be progress now—forget that their father's tools may not be the *ne plus ultra* of all that ingenuity has devised.

When we see a man bending over the old fashioned scythe on level ground where the rapid and graceful movement of the modern mower would delight the eye with its symmetrical motion, calculation with efficient execution, and the reason with the confirmation of progress—see them sweating and toiling from morning till evening, stoutly maintaining that a mower will never be of any service to them, we are at a loss whether to admire their pre perseverance or lament their folly the more. While reviewing such a scene the thought suggests itself, “they are ignorant of what they refuse.” How often is this the truth in the world! Let the truth be known then, and he who has ever beheld, and possesses brains enough to appreciate it, is called upon by humanity to make it manifest. The advantage of tools over the unassisted hand, is as evident as an axiom. To plow, a plow must be used, and the farmer may choose between the Mexican tool of former ages, thought by its simple inventor, to be a marvel of inventive genius, and the perfected instrument of the present day, which we deem a wonder of art in our turn. In the one case, with an immense outlay of physical strength and the exercise of no little skill, he imperfectly tills a diminutive piece of ground, and casts a despairing eye over the broad acres which he must yet prepare for the seed, or his loved ones suffer; in the other, the nicely adjusted instrument glides smoothly through the clod, performing the work with such ease and completeness, that that which was a toil becomes almost a pastime, and there is a time for every duty of the farm in its place and season. Thus is demonstrated the truth, that man was made to cultivate the earth by means of those aids which he can command from the realm of nature. If he had been created so as to have seen in the morning of his existence the perfection of material agencies for the accomplishment of his ends, and with power to develop his ideal, then there would be no choice, for all would be equal to the best, and inferiority would not be known. But this is not the case, and the instrumentalities by which labor is diminished, and the time saved, are continually being modified, in the main for the better, and hence the claim which improvements urge upon men.

Let us consider for a moment the modern mower. Farmers should use it because it saves time, labor and money. It saves time because one mower will do as much work as a half a dozen men; labor, because it is less work to drive and ride, than it

is to sweat in the hay-field over the scythe; and money, because it enables the farmer to improve the favorable season of his work. He that raises grass and grain, well knows that there are times when he would give much to be able to transfer whole crops to the granary at a moment's warning. To such, on such occasions, the value of devices for accelerating the necessary operations becomes apparent. If, in the summer of 1857, farmers had been generally provided with modern agricultural implements, millions upon millions of the products of the farm might have been saved. This remark would apply perhaps with equal force to the summer of 1858. How often is it the case that the farmer with an aching heart beholds the rich product of his toil decaying from unpropitious weather, while recurring hours of sunshine proffer ample opportunities to him who avails himself of the discoveries and improvements of others. Often small farmers may not be able to purchase, from sheer lack of means, but to such usually remains the alternative of buying in company, which, in many cases, may be both feasible and profitable. But of that class who have been more fortunate, there are many who, entertaining a wholesome distrust of the "new inventions," actually seek to invest their money where they may obtain a better per cent. than in improved tools. Such need a demonstration of the truth, and even then they not unfrequently refuse to acknowledge that their own time-honored utensils are not superior to anything that can be contrived.

Metaphysicians tell us that this element is needed in society to avoid the too rapid and radical changes that would otherwise sweep down the valuable and worthless alike; but the constitutions of such minds seem somewhat enigmatical. Show them that a new machine will do the work better, with a much less expenditure of time and labor, and they still prefer to revolve in their old orbits, however angular or distorted, to the adoption of anything calculated to work a change. But perseverance, in such a course, works out its legitimate effect. Those who persist in it will soon find themselves falling behind their more enterprising neighbors. He who refuses to acknowledge practically the benefits and advantages of improvements, is not the man for the nineteenth century. Every department of activity is becoming materially changed in efficiency, and this change is more and still more rapidly being effected. Let farmers open their eyes, consult their own interests, and bring themselves to a willingness to profit by the experience of the world.

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**POLL EVIL.**—In answer to an inquiry, as to the cure for poll evil, we give the following remedy, viz: If, in the beginning of the disease, you wash perfectly clean with soap and water, and apply equal parts of strong vinegar and spirits of wine warmed, three or four times a day, it is most likely to disappear. If, however, this fails to check it, and it proceeds to suppuration, make a vent for the matter by a seton, so that it may flow out. Introduce nothing healing, but encourage a free discharge of matter; or where the tumor is critical and has all the appearance of matter, it is best to bring to a head as soon as possible by poultice. The following is a good poultice: Corn meal, marsh mallows, oil of turpentine and lard. If tumors appear on both sides, open deep with a knife, but do not cut on top of the neck.

For inserting a seton, if you have not the proper needle, take a large embroidering needle, thread with a light colored silk, take up the skin with the thumb and forefinger, force your needle through so that at least two inches of the silk will be under the skin, pull it back and forth twice a day and wash with strong soap suds.

**INTERESTING VARIETIES.**—At Fort Monroe, a party of United States soldiers are employed in a very novel manner. They are trying to wear out an old gun which weighs no less than 15,000 pounds. Ten pounds of powder and a ball weighing one hundred and twenty-three pounds constitute the charge, and with this tremendous load it has been fired over a thousand times. Near it are two guns which were discharged 2,000 times at Pittsburgh. The object of the firing is to test the durability of the iron; and, as to satisfactorily ascertain this, the gun must be worn out, the soldiers are destined to hear thunder for some time.

The year 1609 is forever memorable from Gilileo's discovery of the telescope. Being at Venice his house was thronged with visitors to satisfy themselves of the truth of the wonderful stories told of his instrument.

Boswell observing to Dr. Johnson that there was no instance of a beggar dying for want in Scotland; "I believe, sir, you are very right," says Johnson, "but this does not arise from want of beggars, but the impossibility of starving a Scotchman."

A few years ago a small island was thrown up by volcanic action in the Mediterranean, in sight of a man-of-war. The captain took possession of it, but scarcely had he planted the British flag on this territory, so strongly upheaved from the waters, when the whole fabric disappeared, and left not a fragment behind.

One of the anthracite hot-blast furnaces of the Lehigh Iron Crane Company, at Catasauqua, Pa., made 6,207 tons of pig iron in the twenty-six weeks ending June 30th, or nearly two hundred and thirty-nine tons per week. The London engineer says this is unprecedented.

Gutta-percha is vulcanized with sulphur in the same way as india-rubber.

In the Berlin Arsenal are two leather guns used by Gustavus the Great, in the thirty years' war.

On the St. Germain railroad, in France, the pay of first-class engine-drivers is sixty-five dollars per month.

In the museum at Dresden is a tube, many feet long, formed by lightning falling upon a bed of sand, which has been partially melted by the electric fluid.

A tunnel of forty-two miles' length is in progress from Freiburg to the Elbe, at Meissen, for the purpose of draining the mines around the first-named place.

In the historical collection at the Palace of Berlin there are two cannon balls, each with one side flattened, said to have been fired by opposite parties at the siege of Megdeburg, and to have met together in the air.

There are few operations going on at the earth's surface which are not more or less influenced by atmospheric pressure. The pressure of the atmosphere was discovered in 1643, by Torricelli, who also invented the barometer, the discovery being confirmed by an elegant experiment devised by Pascal. The air pump was invented by Otto



Guericke, a magistrate of Magdeburg, about the year 1650. In the vacuum of an air pump, liquids boil at about one hundred and forty degrees Fah., lower than when exposed to the ordinary atmospheric pressure.

Three of the masts of the *Great Eastern* are made of hollow iron in eight feet lengths, strengthened with diaphragms. Between the joints, as they were bolted together, were placed pads of vulcanized india-rubba, to render the masts elastic. The four engines which drive the paddle-wheels of this steamer are oscillators, of fourteen feet stroke.

By Lord Rosse's telescope objects one hundred feet high on the moon can be distinctly seen.

A cubic foot of distilled water weighs 996.136 ounces, or in round numbers, 1,000 ounces.

Dr. Ernst Alban at one time worked a steam engine in London, to a pressure of 1,000 pounds to the inch.

In the lace manufacture, one man with the machine does the work of 8,000 workers on the cushion.

The engines of the packet-steamers running between Southampton and Havre have each three cylinders, open at the top, the steam acting on one side only of each piston.

Steel swells in hardening. Iron absorbs carbon and swells in case-hardening, as well as in conversion into steel. Forgings of scrap iron are liable, in case-hardening, to absorb unequally, and to twist or warp, owing to the irregularities of the iron.

The weight of ice is ninety-four per cent. of an equal bulk of water.

An instance is on record of 1,000 bricks being well and permanently laid in one hour by a single workman. This was done for a wager, nearly fifty years ago, in the front of the old city of London tavern, now the site of the Wesleyan Centenary Hall.

The great aqueduct at Roquefavour, in France, is two hundred and seventy feet high, and 1,320 feet long. It is formed of three rows of arches.—*Sci. American.*



THE UPS AND DOWNS OF WHEAT.—Mr. C. Wren Hoshyn writes to the *Times*: “For no less a period than thirty-two years, ever since 1827, the price of wheat has moved in quadrennial periods—four years up and four years down—with a regularity so steady and invariable that it is difficult to cast one's eye over the scale of annual averages, and escape the impression it conveys of a perfect natural cycle—no expansion into verbal statements will do justice to the expressive tale which the diagram of annual prices affords to the eye. Briefly told, however, and omitting fractional figures, it is as follows: From 1827 to 1831, the first quadrennial period, the prices of wheat rose from 58s. in the first named year to 66s. in the last. Thence to 1835 it fell by regular annual steps, 58s., 52s. and 46s. to 39s. In the next four years it rose again with equal regularity, through 48s., 55s. and 64s. to 70s. in 1839. Then down by the gradations of 66s., 64s. and 57s. to 50s. in 1843. Up again

through 50s., 51s. and 54s. to 59s. in 1847. Down again in turn by the regular stages of 50s., 44s., 40s. to the figure fearful to agricultural eyes of 38s. in 1851. The next four years it mounted again by the encouraging degrees of 41s., 53s., 72s. to the Crimean altitude of 74s. in 1855; whence it has declined in obedience to the same singular law of succession to 69s. and 57s. in 1856 and 1857, and to the still lower figure it holds in the year just expired, 1858, the third, and happily the penultimate of our present descending series."

It would seem from the foregoing that we are now in our fourth year in which wheat can be bought at a low figure. But suppose a few of our farmers try fifty or a hundred acres of the Chinese sugar cane next year, instead of devoting every acre to wheat; we believe they would find it a better paying crop than any other that can be raised with the same certainty. See what a farmer thinks of the sorgho in Georgia. See page 253.

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### IRRIGATION vs. GOPHERS AND SQUIRRELS.

*Editor Culturist* :—Do your readers generally know that irrigation, or the watering of the surface of soils most infested by gophers and squirrels, is the very best means of their extirpation? Both of these farm pests are excessively annoyed by the flooding of their haunts by water; and, such as do not perish outright by drowning, cannot be coaxed to occupy quarters that they find subject to inundation. I have tried the experiment to my satisfaction, and know of its capital effect. Wherever I have a piece of ground infested by these animals, and I can bring but a small stream of water to bear upon them, it is surprising to see how effective it is. My mode of procedure is simply to close up half or three-fourths of all the holes at the surface by stamping in the dirt tightly, and turning the water briskly into the remainder. The greater part of the animals allow themselves to be driven by the water into the chambers or passages in which the water is not admitted, the more certain to perish from their utter inability to escape as the water rises upon them. Of course a perfect saturation of the entire soil to the surface is required to make it entirely successful; but as it need not be kept up but for a few moments, it is not so difficult or tedious an operation as might be supposed, where water is abundant, and far more effectual than any method of poisoning or trapping.

ANTI GOPHER.

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The practice of flooding land for the destruction of vermin and insects, with the larva of the latter, is not new; but, as it is so seldom resorted to, the majority of our readers doubtless are not aware of its effectiveness; we are glad, therefore, of having it in our power to give publicity to an instance of its practical appreciation from a reliable source, as our correspondent is among the few really scientific and successful culturists of the state. It would seem also that an abundance of water, from whatever source obtained, is yet, for other purposes than the mere drink of animals, to become a desideratum in the practice of California agriculture.

## TURKEY BREEDING.

**F**EW turkey-breeders are aware of the superior advantages of retaining old birds for breeding purposes. The most of our farmers dispose of their turkeys as they call them, every fall, which is in fact two years before they have reached their maturity, and just so long before they have arrived at the best age for breeding purposes. Audubon, the distinguished American Ornithologist says: "The third year, the male turkey may be said to be an adult, although it increases in weight and size for several years more. The females at the age of four, are in full beauty." The naturalist was then speaking of the wild turkey; but as all our families of domestic turkeys have descended from the American wild, not more than about three hundred years ago, and frequent crossings are known to have been made from that time down to the present, it is but reasonable to suppose that the law of growth, that governs the wild turkey also, to a great extent, controls the domestic. Indeed, domestication has only changed the color of the plumage. No breeder of sheep would think of improving his flock by disposing each year of all his old sheep and breeding only from lambs; yet he would be quite as wise as he who annually retains only young turkeys for breeding purposes, for the sheep certainly reaches its maturity as soon as the turkey.

Old hen turkeys do not lay as early in the season, nor as many eggs as young birds, but the young chicks are so much stronger, hatched from the eggs of the old bird, that with ordinary care, more young as well as better, will be raised in a season from the old hens.

Select the earliest hatched, largest and best formed turkeys for breeding purposes, securing a male not related to the females, if convenient. Keep the hens until seven or eight years old, or so long as they continue to lay well, and keep the males until three or four years old, and our word for it, the breeder will be satisfied with the result, for we have seen it tried.

Feed but moderately during winter—more generously towards spring, and plentifully during the laying season, when good hens will lay from thirteen to twenty-five eggs the first litter. These may be hatched with advantage under large hens, especially any of the large Asiatic family. The turkey will soon commence her second litter of eggs, which in number will nearly equal the first. A young hen of ours, that weighed about fifteen pounds, has this season laid over fifty good eggs. Let the turkey set on her second litter of eggs, which she ought to bring off early in July.

When the young chicks or poults come off, which will be in from twenty-seven to twenty-nine days, do not go to stuffing them with dough, allspice, pepper, nor anything else, for they need nothing but warmth for the first twenty-four hours. The second day, give a little hard-boiled egg grated finely, four or five times, and nothing else. Continue the egg daily for three or four weeks. The curd of sour milk, made by scalding the milk with a little water, letting it settle, and straining off the liquid, makes an excellent food to alternate with the egg, after the poults are a few days old. A little stale bread broken finely, may also be mixed with the curd or given



separately. After the young are four weeks old, they may be fed with soft feed to advantage, such as scalded corn-meal, oat and barley-meal scalded; but these meals are poor feed wetted with cold water. It is also recommended by many successful breeders, that pans of sour milk be placed where the young turkeys may drink of it as often as they please. Any person can raise turkeys who feed often when young, and of only fresh nourishing food; and will also keep the cups clean, and the poults out of rains and dews until at least two months old.—*Cor. Country Gentleman.*

### SUMMER-HATCHED CHICKENS.

WE copy the following article from the *London Cottage Gardener*: There is an old proverb in some parts of the country that summer chickens never thrive. It runs thus in parts of Hampshire:

“Chicks that are hatched when there’s making of hay  
Will never grow up, but pine away.”

There is something so discouraging, when misfortune has happened to be anticipated. May chickens, in the idea that the season is passed, and that there is no remedy but patience, that we are disposed to offer comfort to those so situated.

All those who wish to rear poultry without much trouble choose the month of May for doing so. Sometimes a hen deserts her nest a few days before hatching; sometimes she dies upon it. If we listen to the above tradition there is no remedy. But we believe there is, and a simple one; set more eggs, and be not deterred by fables. We go on hatching till August and we are successful. The London market is only supplied by this process with the poultry for which it is so justly celebrated. Fowls of the same age can be had all the year round because the work of hatching never ceases. If we were to tell such of our readers as require instruction on the subject, that any expensive or very troublesome process was necessary, they might perhaps, say that of two troubles, they thought waiting was the less. But it is not so; and we confess, it seems to us that the idea can only be supported by that undeniable argument—“I do not know how it is, but I know that it is so.” Another large class of poultry breeders say they do not believe in the saying; but June is too late for chickens. It is wonderful what a bore a man becomes to great talkers, who of necessity, deal largely in assertions, if he makes a rule of saying only “prove it.” Many a man who prides himself on his veracity, and who is a truthful man, will be surprised to find how much of his conversation is derived from his own or other people’s imagination. Well, if you say it is too late, we say, “prove it.” The nights are shorter in June than in May; the weather is warmer. Nearer to the winter you say; but you have four months to the end of October, all good growing genial weather, and, at that age, your chickens will stand anything. They are three weeks or a month later, that is all. It may be said there must be some foundation for the proverb; so there is. The sun is too hot and scorching, and if chickens are entirely

exposed to it they will die. Put the rip, with the hen into it, in a shady place, but near the sun. As in April you gladly turn it to the sun, wherever you can find it, so in June turn it away. Let it be near covert for the chickens, shrubs, artichokes, peas, anything that produces shade and harbors insects. You will find your chickens live there a great part of the day, and always when the sun is most powerful. They find there the insects that have deserted the parched grass. Let them be well and frequently supplied with fresh and cool water. If you can do it or have it done, you will find a great advantage in having a few pails of water scattered every evening on the ground they use in the day; it freshens it and keeps it cool. To sum up, give your chickens shade, clean and cool water, with a run affording them covert; and we promise you, you shall say and prove that the prejudice against June chickens is a popular error.

### GYPSUM AS A FERTILIZER.

*Editor Culturst:*—As an agriculturist I am engaged almost exclusively in stock-growing. The subject of summer and winter forage for my animals, has therefore engaged my most serious attention, for the past two years particularly; inasmuch as that I find a rapid falling off in the quantity of feed produced upon the same soil year by year. Either we must substitute new grasses, better adapted to close grazing, or devise some mode to make those we have, more productive in their amount of forage. I have tried alfalfa, and am highly pleased with it; for, on suitable ground, it produces abundantly and is an excellent food for stock. A three years' growth, however, of this, upon the same ground is followed by an evident decrease in the quantity of food yielded per acre. If cut and carried from the field as hay, the soil will require manuring after the third or fourth year, or a sensible decrease of the product is inevitable.

It becomes a matter, then, of grave import, as to how we are to continue our lands in a state of fertility, either as mowing or grazing lands. It appears to me that no mode can possibly be devised, by which animal manure can be procured in quantity sufficient to maintain the breadth of acres that will be required, for either grazing or mowing, in a state of perpetual fertility. What, then, is your opinion of the natural or manufactured, concentrated fertilizers, as the means of such continued fertility? Can they be made available at a cost that will warrant their application? I wish particularly to obtain the fullest information possible, of the probable effects of gypsum upon California soils, exposed to an ocean breeze during the entire of the dry or summer months. And whether its application would be likely to prove of any advantage in prolonging the alfalfa yield, without the aid of other manures. I may possibly have made a "bull" in saying *other* manures; is gypsum a manure or only a stimulant to the soil, as alcohol is to the human system? Will you or any of your correspondents answer?

COAST RANGE.

MARIN COUNTY, NOV. 20.

We have never had experience with gypsum upon California soils; and, though we have directed letters of inquiry to three experienced culturists, upon the subject of gypsum as a fertilizer, we have received but one answer, and that person has never yet tried a pound of it. We have not a doubt, however, but that, upon certain soils, it would prove a valuable auxiliary in promoting an exuberant growth of all the varieties of the clover family; but of its value for increasing the product of the finer blade grasses we have but little faith. To those who desire to know more of the mineral constituents of gypsum and its practical uses as an application to the soil, than we are personally able to impart, from our own knowledge or experience, we present the following from that excellent agricultural journal the *Country Gentleman*:

"We do not expect to offer any new theory in regard to its action, or anything beyond what a careful examination of published researches and experiments of others, and our own trials of it upon the different products of the farm, have taught us. So much even, may interest a portion of our readers.

Gypsum, or sulphate of lime, is a mineral compound frequently met with in large quantities, and where it may be quarried like stone. Many soils contain it in greater or less amount, and it is taken up by certain classes of plants—as their ashes show on analysis—and it is found in the excrement of grazing animals. Chemical science states the constituents of one hundred pounds of native plaster or gypsum as—water twenty-one pounds, lime thirty-three pounds, sulphuric acid forty-six pounds—the water being in chemical combination with the sulphate of lime. When burned or calcined, the water is driven off, and the one hundred pounds of plaster is composed of forty-one and one-half pounds of lime, and fifty-eight and one-half pounds of sulphuric acid, and seventy-nine pounds, burned, equalling one hundred pounds unburned plaster. This analysis is that of pure gypsum, but plaster, as usually found, often contains several per cent. of other substances, as clay, carbonate of lime, etc. If much lime be present it will injure the value of the plaster as an absorbent of ammonia, for which purpose pure gypsum is often usefully employed in stables and upon dung-heaps; but as a soil dressing, such plaster is as valuable as though pure, and more so than where lime is wanting.

The agricultural effect of plaster is the same, whether burned or unburned, if equally pulverized. When reduced to powder in a raw state, it does not swell by absorbing water, even if placed in it, but remains like sand. If properly burned, and then exposed to atmospheric influences, it regains its twenty-one per cent. of water, but after that has no special attraction for moisture. Hence we see no ground for the opinion entertained by some, that plaster benefits vegetation directly by attracting to it a greater supply of water than it would otherwise receive. Overburning injures the attractive power of plaster—hence ground plaster is generally preferred and employed.

It is very generally conceded that gypsum is beneficial to most leguminous plants, and especially to red and white clover. It is frequently applied to peas, beans, corn, potatoes and like products, and sometimes to wheat, barley and oats, and most writers



agree that its direct application to grain crops is of doubtful utility. Prof. S. W. Johnson, speaking of the effect of plaster, says: 'Experience shows that the increased growth of a plant consequent upon the uses of gypsum is disproportionately great in the *stem* and *foliage*; the production of *seed* is not greatly increased.' This agrees with the general opinion and practice of farmers—those plants which yield a large mass of vegetation, and are valued mostly for this product, are thought to best repay the application of plaster, while it is seldom given on grains mostly cultivated for seed. Tobacco and corn, with abundant stems and leaves, and potatoes with large vines and fleshy tubers and little seed, are adduced as further examples. Experiments have shown a large increase in the vine or straw of the pea, produced by a dressing of plaster, while the seed itself was but slightly affected in product.

Plaster operates most beneficially upon light, dry soils, or those of a sandy or loamy character. '*Excess of moisture and poverty of the soil*,' says Johnson, 'are the chief hindrances to the action of gypsum.' The richer the soil and the better the culture, the greater the benefit received from a dressing of gypsum. Some soils, however, already possess a sufficient supply of sulphate of lime—or at least of sulphuric acid—hence no further application is required. Mucky soils are usually of this character, and sandy land overrun with sorrel, needs lime or ashes rather than plaster, as a fertilizer. Soils abounding in vegetable mold receive little benefit from gypsum; but even clays, if dry, and deficient in mold, are much improved in productiveness by plaster.

The action of gypsum is largely influenced by the character of the weather. It proves most beneficial in a warm moist season—in one of a contrary character the effect is scarcely evident. This has been explained as resulting from the more abundant moisture of frequent rains, which dissolve a greater amount of the plaster, and thus render it available for the use of plants. At the same time the greater heat augments the chemical action of the leaves upon the sulphate of lime, decomposing the same and rendering it active upon other minerals contained in the soil. We have found that, upon clover closely pastured, its effect is slight, while a similar field allowed to grow uncropped, was decidedly benefited. This indicates, we think, that the effects of this stimulant are elaborated through the leaves of plants, and the additional elements drawn from the air and soil by the more abundant vegetable growth.

The quantity usually applied is from one hundred to three hundred pounds per acre, repeating the smaller amount more frequently—perhaps annually—on all crops to which it is found beneficial. It is usual to sow plaster on land newly seeded to clover, and the clover crop may be largely increased by an annual dressing of this fertilizer. Some have sown it on clover after cutting the first growth for hay, in order to increase the second growth for seed; but the desired effect has not usually been attained. The growth of clover hay has been increased, but the product of seed was imperfect, and a light crop. For corn and potatoes, a hill-dressing, after the first hoeing, of a spoonful to the hill is generally given, though some sow it broadcast even on these crops. For wheat, many farmers recommend plastering the summer fallow, either before breaking up the same, or previous to the last plowing.

Upon peas, beans, buckwheat, etc., it is usually sown soon after the plants appear above the ground. The effects of any application of gypsum, are generally increased and hastened if followed by a warm and abundant fall of rain.

Gypsum as we have formerly remarked, is not, strictly speaking, a *manure*, nor will it answer *instead* of manure. But on soils already fertile it acts as a stimulant, enabling certain crops to appropriate more readily and largely the food of plants already present in the soil, dew or rain, and atmosphere. It does not exhaust the soil, save as all increased production exhausts it—drawing from its stores of fertility in proportion to the crop produced. It takes, as stated in our former article, an important part in the system of green manuring by plowing under the clover plant—one of the cheapest processes of enriching a soil not yet worn out, which has ever been employed. Its use in agriculture should be largely extended; if any are in doubt, in regard to its effect upon their soils, a few simple and inexpensive experiments will test the question, and perhaps many other points now rather inconclusively settled.”

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### AN OLD THEORY.

*Editor Cultivist*:—On the occurrence of an unusually dry summer in the Atlantic states, it has been asserted that the succeeding is always a good crop year. It is accounted for thus: The porous vacuum, occasioned by evaporation at and near the surface, is replenished by capillary attraction from the subsoil and lower strata. Water coming from below to the surface, holds in solution minute portions of fertilizing salts; the ascending water is evaporated, but the salts contained are deposited at the surface. Alternating rains tend to wash or carry these salts down again beyond the reach of the roots of common crops. The fact that such salts or niter principally, in some of the Eastern states does rise to the surface, is demonstrated by the test of soil long covered by old houses. I have seen such soil leached for the niter it contained to use for making powder.

Before I came to California I accounted for the stories of its excessive fertility on this theory. Is the theory at fault here? If the laws of nature are here and everywhere the same, it must be true; then good retentive soils here under process of our dry summers, can never become wholly exhausted. Repeated crops of cereals may exhaust of cereal fertilizers; but the natural process may replenish these under a rotation of crops feeding on other than the food of cereal plants. I am not able to suggest what crops are adapted to the best system of rotation here; yet I do assert that, not only a rotation of crops, but also a greater variety of products, is necessary with us, to adapt our market supplies to the demands of trade and other wants than those of home.

C. M.

PETALUMA.

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We would like to hear the opinions of other of our correspondents upon this “old theory.” It certainly seems quite plausible, and may be a way for accounting for

some of the extraordinary growths of vegetation witnessed upon soils that, to mere appearance would indicate they contained but very little of what we would suppose to be the constituents of plants. We would like to see the fact generally admitted, that there is in the subsoil certain soluble salts of benefit to vegetation; as this would be a strong argument in favor of deep plowing, that possibly some of this under strata of fertility, could be made available. We have never had a doubt of its existence there.

But if it is true that the lower stratas of soil and subsoil contain these valuable fertilizers, what particular harm can there possibly be in the roots of trees running down into them? With one breath we are told we must plow deep, that we may avail ourselves of some portion of this storehouse of valuable fertilizers, that have leached downward from the surface soil; and with the next we are told that it is all wrong for the roots to penetrate deeply downward. Our own belief is, that valuable fertilizers are to be found in nearly all subsoils; and if they cannot be brought near the surface by mechanical means, that we had better let the roots of plants and trees go down, if they will, till they find them.

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### WHEN TO PLANT AN ORCHARD.

*Editor Culturist*:—At an elevation above the Sacramento valley, at which snow falls at intervals during winter, to a depth of from one to six inches, with frequent and considerable frosts, and where fruit trees seldom blossom before the middle of April, I would like your opinion as to the best season for transplanting trees from the nursery to my well prepared orchard ground. AMONG THE FOOT-HILLS.

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*Editor Culturist*:—The proper time for planting orchard trees is approaching, at least so we are informed, or reminded by the appearance of Sanderson & Co's nursery advertisement in your November number. I have read with a great deal of interest the remarks of your correspondent, "UP COUNTRY," headed, How a Vineyard was Planted; also, How an Orchard was Planted, and now, being yet a novice in the science of tree-growing, would be much pleased to obtain the same gentleman's views as to *when* to plant an orchard. NOVICE.

SAN FRANCISCO, Nov. 6th.

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"UP COUNTRY" is occasionally seen in our city. This happening but a day or two after the above inquiry reached us, we availed ourself of the opportunity to but-hole him on the subject; upon which he hastily penned the following;

Your correspondent asks *when* to plan an orchard? I have planted orchard trees in California from November to May, and the gist of my experience is, if you cannot plant early, while the ground is warm, it is best to keep the trees heeled in, under cover, in a dark, dry spot, and then plant after the ground becomes warm—in the latter part of winter or early spring; and with this late planting carefully done, I



have had uniform success. Dig the holes deep and wide, early; let frost, sun, rain and wind act upon the subsoil; plant on any convenient day when the dry north wind is not blowing; water once while the *first early growth is yet vigorous*, and success will follow.

UP COUNTRY.

In answer to our correspondent AMONG THE FOOT-HILLS, we may be expected to put in our own opinion as regards the best time for orchard planting in his locality. This we believe must depend very much upon the condition of the trees to be transplanted. If they are obtained from a nursery situated in one of the lower or warmer valleys, where from the absence of frosts, the leaves are retained perfectly green till late in December, and then only removed by hand, we believe it would be better to defer their transplanting till spring, because just so long as the leaves continue to grow anew upon such trees, though it may be quite into December, the new wood cannot be perfectly ripened, and consequently should not be removed to a frosty altitude in that condition. Such trees should be suffered to remain till they drop their leaves; then taken up and, after being properly bundled secure from freezing, transported to their new position and "heeled in," as described by "UP COUNTRY," to remain till time for spring planting, or when the buds show the first inclination to swell.

We have always advocated early fall or winter planting where practicable; that is, when the tree is in proper condition for setting, and the ground in proper order; and the earlier the better. The roots of trees should never be allowed to dry, or be touched by frost whilst out of ground; a neglect of this precaution is the cause of the failure of large numbers of otherwise excellent trees.



MORE ABOUT BEES.—*Editor Culturist*.—I noticed in the November number of the *Culturist*, an article on "Drone producing Queens," which is true as far as it goes; but it does not tell the whole in relation to them. I have had, during the past season, two imported queens, the majority of whose eggs produced drones. I suppose the cause to have been their age—as queens, after they arrive to the age of three or four years, are apt to lose their fertility, and their eggs, what they lay, produce drones. I also had two young fertile queens whose eggs produced worker brood; these two queens received accidental injury, after which the eggs they laid produced drones. I have had swarms without a queen for some time that had worker bees that laid eggs; they are what are termed "fertile workers;" their eggs also produced drones. Thus it seems, that only perfect queens produce worker brood; for young queens that have imperfect wings, or old ones after they have lost the vigor of youth, or queens that have been injured in any way, or fertile workers, all produce drone brood; and what is peculiarly interesting is, the instinct the bees seem to possess, of trying to remedy the evil, by attempting to rear young queens. They seem to possess a knowledge in themselves of their wants, and try to supply them. These facts are not only true in California, but are the same everywhere.

SACRAMENTO.

B. J. A.

## A MIXED HUSBANDRY.

*Editor Culturist:*—Whilst very many of our large wheat-growers are deploring the low prices of their favorite grain, there are others who rejoice over their fine prices for their fine crops of oats, potatoes and Indian corn. I confess I am not of that number, but would be very glad if I was. I have always considered that the farmer, take one year with another, was safer in the production of the one great staple of human food, than in any other one product; but I am getting my confidence badly shaken in reference to the truth of my proposition. Wheat, during the last two years has not paid well, and the prospect is that we shall have a surplus for years to come. My reason for believing it, is this: we find every year the low price of wheat at the end of every man's tongue, from harvest time to seeding time, and all are bemoaning the fact, that so many will persist in sowing so large a proportion of their arable land to wheat, when other crops can be made to pay so much better.

They seem to think that by constantly harping upon the theme, they will induce others to try it, and each, feeling convinced that he has persuaded his neighbor to abandon to some extent the growing of their favorite grain, chuckles over his belief that now he will have the full field to himself, and accordingly pitches in for a heavier crop of wheat than ever before, and only discovers his error, on finding that every one else has done the same thing. Now to remedy this evil—for it really is an evil of magnitude—somebody must go to work, producing something besides wheat; for it must be evident to every mind, that wheat, at any lower figure than present rates, will barely pay the cost of production. We must practice more of a mixed agriculture to render our annual successes sure. Who will be among the number to initiate the new era?

YUBA.

We find an excellent note in the *Alta California* so exactly corroborating our correspondent's views upon this important subject to the California agriculturist, that we appropriate it: "Our farmers, rejoicing over the bounteous rain, seem to have forgotten their unsold crops, and are preparing their grounds for another wheat harvest, in extent noways lessened by the experience of the last year. The tillers of the soil have their good or evil success in their own hands—the matter of the remunerative prices is within their own control. This last year all planted wheat, and the result is shown in crowded warehouses, crippled farmers, and short finances through all the business of country stores down to the city importer.

A far different state of things would be now in progress had our farmers more generally planted a mixed crop. Neither farmer or storekeeper are safe in the present impulsive system. *Mixed husbandry is the only safety of California farmers.* Without an outlet, without manufacturers, with new men constantly arriving in the country, whose natural impulse is to farm only in the beaten track, planting only those seeds which can in one season be easiest cultivated, making in their numbers a competition in the product which will inevitably bankrupt our farmers, unless an absolute change is made in the present system of culture—it behooves every farmer

not only to plant a mixed crop himself, but to encourage his neighbors so to do. If rust strikes his wheat, to have the oats and barley to fall back upon—to fallow a portion of his fields with roots or corn, converting the one into dairy produce or mutton, and the other into beef or pork, at the price each market may warrant, securing this new source of income, and insuring against debt or pressure, when, as now, some one article is in such plenty as to be in price below the cost of production on all second class farming lands. Adopt this season some system of mixed husbandry, and the coming harvest will find our farmers prosperous. Follow the present inclination and plant, as now, the larger portion of their lands in wheat, and we fear the coming harvest, if as bountiful as promised by the early rain, will find the agricultural interests in a far worse position than they now are; for as the world's market for grain now stands there is but small chance for advance here."

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### DEEP PLOWING—ADOBE.

*Editor Culturist*:—Your November number contains an editorial on the subject of plowing adobe land for wheat, that I consider worth more to me in a single year, than five years' subscription, or twenty-five dollars; and for the reason that I shall save more than that, in animal power, between turning the soil to a depth of five inches instead of ten. I have always advocated deep plowing, and practiced it even upon adobe lands, and have frequently been mortified and disappointed, at seeing my neighbors, with a furrow slice half the depth of my own, growing more wheat than I could, and without the true reason why, ever occurring to me.

I have always noticed that my deepest plowed adobe land, dried out the quickest on the approach of summer; why, I could not tell, it being so much at variance with my former theory; though in plowing thus deeply, I but followed the continually reiterated advice of your cotemporary of the *Farmer*. I am satisfied that the error of plowing adobe land deeply, lies as you say in this, that though plowed, it is not pulverized. All know that to subsoil deeply any land inclining to be wet, is almost equivalent to under draining—it renders both soil and subsoil drier; and very deep plowing upon adobe soils has precisely the same effect, and just the opposite of what the California wheat culturist wants. Hardly a wheat soil in the state has, during any part of the season, a surplus or excess of moisture; just the reverse of what pertains to a large proportion of such lands at the east.

But to persist in a continuance of the shallow furrow for wheat, even upon the richest of our adobe lands, will eventually work its impoverishment. We must necessarily go deeper. What we want, then, is some device that will more effectually pulverize the soil to a greater depth than any plow or implement now in use amongst us. Cannot our mechanics invent something to meet the case? How would an implement answer that, instead of turing the full depth of the furrow at a single turn, would—something after the fashion of the Michigan plow—cut a succession of thin slices? Or, if this should not prove quite the thing, perhaps some modification



of the gopher plow, as used by Thompson and Osborn, of Napa, might meet the case. I believe it will be found equally advantageous to plow adobe soils deeply as other soils, but they must be pulverized, not thrown up and left a mere mass of loose chunks or boulders to dry the full depth of the furrow slice. ADOBE.

SAN LEANDRO, Nov. 10th.

### AYRSHIRE CATTLE IN CALIFORNIA.

THE recent importation to California, of four full blooded Ayrshire cattle, we hail as the commencement of the best dairy breed of cattle for this state the world can produce. The reputation of this breed for purely dairy purposes, among the best informed in the Atlantic states, is such, that the state of Massachusetts ordered, and has imported direct from Scotland, fifty-one head. This superior dairy breed of cattle has a reputation far from ephemeral; in relation to their value compared with other breeds and their dairy qualities, we copy the following from Flint's work on the dairy:

"The Ayrshires are justly celebrated throughout Great Britain and this country for their excellent dairy qualities. Though the most recent in their origin, they are pretty distinct from the other Scotch and English races. The Ayrshire cow has been known to produce over ten imperial gallons of good milk a day.

Youatt estimates the daily yield of an Ayrshire cow, for the first two or three months after calving, at five gallons a day, on an average; for the next three months, at three gallons; and for the next four months, at one gallon and a half. This would be eight hundred and fifty gallons as the annual average; but, allowing for some unproductive cows, he estimates the average of a dairy at six hundred gallons per annum for each cow. Three gallons and a half of the Ayrshire cow's milk will yield one and a half pounds of butter. He therefore reckons two hundred and fifty-seven pounds of butter, or five hundred and fourteen pounds of cheese, at the rate of twenty-four pounds to twenty-eight gallons of milk, as the yield of every cow, at a fair and perhaps rather low average, in an Ayrshire dairy, during the year. Aiton sets the yield much higher, saying that 'thousands of the best Ayrshire dairy cows, when in prime condition and well fed, produce one thousand gallons of milk per annum; that in general three and three-quarters to four gallons of their milk will yield a pound and a half of butter; and that twenty-seven and a half gallons of their milk will make twenty-one pounds of full-milk cheese.' Mr. Rankin puts it lower—at about six hundred and fifty to seven hundred gallons to each cow; on his own farm, of inferior soil, his dairy produced an average of five hundred and fifty gallons only.

One of the four cows originally imported into this country by John P. Cushing, Esq., of Massachusetts, gave in one year 3864 quarts, beer measure, or about four hundred and sixty-four gallons, at ten pounds to the gallon, being an average of over ten and a half beer quarts a day for the whole year. It is asserted on good author-

ity, that the first Ayrshire cow imported by the Massachusetts society for the promotion of agriculture, in 1837, yielded sixteen pounds of butter a week, for several weeks in succession, on grass feed only. These yields are not so large as those stated by Aiton; but it should, perhaps, be recollected that our climate is less favorable to the production of milk than that of England and Scotland, and that no cow imported after arriving at maturity could be expected to yield as much, under the same circumstances, as one bred on the spot where the trial is made, and perfectly acclimated."

Experience has already shown, at Oak Knoll farm, that the grades of this breed give milk in greater quantity and more continuously than any other, on the dry summer pastures of Napa. It is to the dairy stock of that well known farm, that the recent importation of full bloods has been added. The animals were selected from the very best Ayrshire herds in the United states, Mr. Alfred M. Tredwell, of Morris, Madison county, New Jersey. The bull, young Malcolm, bred by him, is decidedly the finest young animal yet seen in California.

Mr. Treadwell deserves great credit for the manner in which this order has been filled. Each animal was boxed in a hardwood package, lined and stuffed, with bolts and rings at the ends to assist in transshipment, so that they have arrived without a blemish or chafe, and in as good order as they left their Jersey pastures. The commission of the proprietor of Oak Knoll, to Mr. Tredwell, for the selection and shipment of these animals, was at the suggestion of the editor of the *Country Gentleman*, and the admirable manner in which he executed the commission, is conclusive of the importance of agricultural editors possessing a knowledge of the best stock of the country, and the proper person to fill an order for the same. It enables the importer to send for stock at far less cost than he could go for it; whilst the chances of success are equally in his favor, as regards the grade or blood of the animal. We congratulate the stock-growers of Napa county, on this fine acquisition of blooded animals, to their already superior herds.

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## DEVON CATTLE ON THE PACIFIC.

IN consequence of the importation, during the last year, into this state of several animals of the North Devon blood, and the recent arrival of a celebrated herd of this breed, we have received many inquiries respecting this class of cattle, to answer which, both in respect to their general qualities and their adaptation to the peculiarities of our soil, climate and consequent methods of management, we have availed ourselves of the best authorities to add to the knowledge we already possess—coming as we do from a region where the Devon blood has long been in favor and exhibits the evidences of its superior excellence. There are several breeds of cattle which possess intrinsic excellence for special purposes, as the Ayrshires for milk, the little Alderneys for butter, and the equally small ungainly Highlanders for the fine quality and delicate flavor of their beef; but for the combined objects for which cattle are

generally bred, and for the improvement of common stock in all these particulars, the only breed which approaches them in value is the Durham or Shorthorn. These are, when bred in perfection, of fine form and beautiful proportions. Their carcass is deep and full, and their beef is generally tender, but not firm; the fat also is laid on in masses, not being "marbled," or mixed through the lean.

Their milking properties are quite variable, some high bred Durhams being good milkers, but generally they are inferior in this respect, though the first cross with Devon is commonly beneficial to both. As working cattle they have large bone and a heavy carcass; but the same lack of force and endurance which unfits them for summer range and winter exposure, renders them unsuited for continued exertion in the yoke. Their variableness in respect to milking qualities, as well as their great diversity of color is attributed to their being an artificial breed produced from various sources; and, while the object has been to unite the excellences of all, still it is a fact in physiology, that however perfect individuals may be produced by crosses of animals possessing each some desirable qualities, the inferior points of their progenitors will reappear in their offspring.

Since the improvement of the North Devons, they have achieved a well deserved popularity; and, though fashion, which reigns as supreme on the stock farm as in the milliner's shop, supported for a time the larger and more showy breeds, still their tried friends knew their value, and adhered to them through all the changes of fashion, and are now on the top of the wheel again, after enjoying in quiet the profit of their choice, during the period when the popular caprice overlooked their claims.

As beef cattle those who are accustomed to bringing everything to the test of *size*, without counting what it costs, often think lightly of the Devons, and this impression is increased by their compact form and dark red color; so that good judges frequently underestimate them a hundred pounds in weight; but there is no breed the weight of whose valuable joints bears so large a proportion to the food consumed; and in quality it is famed for its excellence, being fine grained, juicy and beautifully marbled. For the dairy their yield of milk is equal to any except the Ayrshires; while its remarkable richness fits them especially for the butter dairy, and every one is familiar with the reputation of "Devonshire cheese." As working cattle they far surpass all others in quickness, strength, endurance and tractability. In Devonshire they are preferred to horses for the farm and even for the road, being worked until they are five or six years of age, when they are quickly fattened for the butcher. Having examined the points and qualities by which they are distinguished, we will conclude with a few remarks on their suitability to our soil and climate, and to the methods of management we are forced to adopt so peculiar to this side of the continent.

Soiling and stall feeding are not yet adopted here by our economists in agriculture, and we hope the day is yet far distant, when any change will be made from the methods which nature has provided; for we do not think that healthy flesh can be accumulated in confinement. With our method of ranging for pasturage, and moving herds up into the mountain valleys in the dry season, we require cattle which



will bear to travel without loss of condition. So important is this quality that many intelligent stock-men in the state have crossed their eastern herds with Spanish bulls for the sake of getting the essential quality of hardiness at the expense of narrow hips, shallow flanks and thin withers; while the Devon cross improves them in form and quality, at the same time that it gives them vigor, endurance and force. The other breeds require succulent food and abundant water; while these fatten equally well on dry food and endure abstinence from water as well as Spanish cattle, thus entirely fitting them for our "dry season," which some regard as the great bugbear in the way of successful farming, but which only requires experience and common sense to be made to subserve the purposes of agriculture better than the baking heat and driving storms of the Eastern states.

And, finally, as to the cross. The blood of the Devons is so pure and strong that it tells powerfully in color and quality, even in a small proportion. Let those who propose to infuse this blood in their herds procure a male and one or two females, and they will then be able to keep up the blood in its purity; then, a few years hence, we shall see this beautiful breed of cattle as abundant on our hills and over our valleys, as are now the wild relics of the Spanish race. The recent considerable importation of Devons, alluded to in the commencement of our article, is by C. A. Ely, Esq., San Francisco.



**PRESERVING EGGS.**—The most simple and successful method of preserving eggs for fall and winter use, is to employ a pint of lime and a pint of salt, mixed with a bucket of water, and after packing the eggs in a jar or keg, with the small end downwards, in successive layers, then carefully turn in the mixture until the eggs are covered.

In our travels in Kentucky we stopped at a place where probably the largest number of fowls are kept in the State, and we were shown some small chickens that were hatched from eggs that were packed in August (1858) and preserved according to the above directions. Six of the eggs thus preserved were marked and placed under a hen, together with eight fresh laid ones. Every egg but one hatched, which was one of the marked ones. The fact was so remarkable, it led to doubts in the minds of some of the family, whether there must not have been some mistake in the matter, when the female who had the chickens in charge, and who has raised the present season about one thousand, repeated the trial, taking eight eggs from the same keg near the lower tier, and placed them under a hen with no other eggs; in due time five of these eggs hatched out strong and healthy chickens; a sixth egg was thrown out of the nest and was broken, when it was discovered that it contained a live chick. Thus it will be seen that eggs by this method cannot only be preserved from eight to nine months perfectly fresh, but that the living principle can be retained and the eggs hatched. These eggs were put into a keg or half-barrel and headed up so as to be nearly or quite air tight, and then placed in a cool-cellar, where they remained all winter. The fresh, natural appearance of the eggs, when broken to be cooked, led to the idea of testing their vitality by an effort to hatch them.—*Valley Farmer.*

# Editor's Repository.

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**THE RAINS.**—The predominant climatic feature of the past month in California, has been the frequency and abundance of the rains. It is very seldom indeed, in California, that the first rains are of sufficient abundance to enable the farmer, in very many localities, even to begin to plow, and particularly is this the case on most of our clay and adobe lands. But the recent autumn has proved an exception—not only were the first rains more copious than usual, allowing the plow to run freely in almost all soils immediately after their fall, but they have continued so steadily and with increasing abundance as to be in actual excess.

We have now more rain than we wanted so soon, and plowing is impeded almost as effectually as though the usual deficit had prevailed, at least this is the condition of many soils; if there are exceptions, it is where sand or gravel predominates over clay or adobe. What the effect of this superabundance of rain may have upon next year's crop, will depend very much upon the quantity which we are to receive for the remainder of our rainy season. If the excess should be continued for even one month, it would effectually prevent the fitting of a very large breadth of land for the more important cereal wheat; for, to delay the plowing for a month from this date, would carry the seeding season far towards spring, the consequence would be, a far less breadth of wheat the coming year than the last, and better prices would obtain.

Not only has the season thus far been remarkable for its copious supply of rain, but the first two or three considerable wettings were so warm and genial in their character, as to clothe, as it were by magic, the valleys and hills of the entire lower country, with green. Throughout a large extent of country, the new grass and green herbage, presents a very fair bite of pasturage, which, if the weather continues mild, will prove of incalculable benefit to the herdsman; but should cold weather and frosts obtain, to a degree that would cause the destruction of the present growth even, we fear the consequences that might ensue to many large herds. Exposed to long continued cold rains, with scanty forage, even in California, thousands of animals must inevitably perish. The effect of continued rains from the present, onward into winter, would also greatly retard all manner of vineyard and orchard planting, rendering an excess of preparation and planting out, to be performed, within a greatly restricted period, over that of previous years. This, again, will have its effect upon the nurseries of our state; less trees will be sold than though every month of winter had been propitious for transplanting. All these are matters for consideration, that may well claim the attention of agriculturists in every department.

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**OUR FRONTISPIECE.**—As we promised in our last number, we present a fine lithograph by Kuchel, of the *Beurre d'Anjou* pear; size and form a perfect copy of a specimen grown by Mr. John Lewelling, nurseryman and fruit-grower of San Lorenzo. This variety proves to be one of the best autumn pears grown in California. Size large, skin a greenish yellow, with sometimes a slight blush if exposed to the sun. Succeeds best on pear stock here, but is said to do well on the quince.

Inclines to an upright growth till it begins to bear, when it spreads gracefully, forming a beautiful tree. It is a large and regular bearer at San Lorenzo, ripens in October and November.

Downing says: "This is a first rate pear, recently imported from France by Col. Wilder, of Boston, which appears to us quite distinct from the Brown Beurre.

Fruit rather above medium size, very regular, obovate. Skin greenish yellow, smooth, a little clouded with russet, especially around the calyx. Calyx small, open, in a round smooth basin. Stalk rather short, straight, set in a slight cavity. Flesh yellowish white, very fine grained, buttery, slightly sub-acid, with a rich, sprightly vinous flavor.

In our next number will be a beautiful lithograph of the Osage orange.

**ARTESIAN WELLS.**—*Editor Cultivist*:—Your cotemporary of the *Farmer* seems to be backing down of late from the position he had assumed, that "artesian wells are a curse" and "irrigation worse than useless." He now says, "In all we have said about irrigation, it has not been against all irrigation by any means, but against excessive, unnatural, or a flooding system." Now, for one, I am glad to see the Colonel getting round on the right side of this question; for, as regards excessive or unnatural irrigation, I have never known it urged or surported by any one in this valley. We have been promised "stubborn facts," from time to time, in support of his position, that "artesian wells are a curse and irrigation worse than useless;" but to the present time not the first fact has appeared.

True Mr. Prevost says: "Before the boring of these wells, I had more water than I needed for all my establishment," and yet it would seem that after this he wanted more water for something, for he had "two of these wells bored." What could he have wanted so much water for, except for irrigation? But this is not where the shoe pinches; for it would seem that "when other wells were bored below," his "naturally stopped running over." And this is the whole secret of the trouble about the artesian wells; some who first bored upon higher grounds, find their common source of supply, tapped lower down, by those who have felt the same need of a more abundant supply of water than could be otherwise obtained, even though "always found within two or four feet of the surface," before the first artesian well was bored. "*Self-interest* is a powerful stimulus," says the Colonel; and I believe it, as applied to Mr. Prevost's reasoning against artesian wells; all was well enough whilst he was draining the water from some yet higher portion of the valley; but when others, lower down, begin to draw down his head of water, why all is wrong, or "*self-interest*" supreme.

I have seen many an old rusty gun that could'nt be touched without going off half cocked, and the position assumed by your cotemporary, the Colonel, that "artesian wells are a curse and irrigation worse than useless," reminds me of that description of fire-arm.

SAN JOSE.

**WHERE SHALL I GET TREES?**—We are very often asked this question, by those in want of nursery trees with which to stock their orchards and fruit grounds. Now no one supposes that those in want of trees, are really ignorant of the fact, that there are numerous nurseries of trees on sale in very many localities; there must be a reason back of all this that induces the inquiry. A man in setting an orchard, not only wants trees true to the kinds he buys them for, but he wants good, sound, healthy trees, adapted by their habit of growth, to the locality they are destined to occupy. It is a favorite theory with our cotemporary of the *Farmer*, that nursery trees be obtained from such localities as produce the best fruit; thus, if Oregon apples of the same varieties are superior to ours, why send to Oregon for nursery trees, if the apples of Santa Clara valley are superior to any other yet raised in the state, though the products of irrigated grounds, why there is the place to get trees. We agree with our cotemporary on this point. Superior trees to those on sale this season by L. F. Sanderson & Co., L. A. Gould, and B. S. Fox & Co., are not to be found anywhere in the state. The climate of the valley seems admirably adapted to the production of all the orchard fruits of temperate latitudes, and trees grown there, have proved the best in the state for the formation of orchards among the more elevated and frosty districts, on account of the fully matured condition of the



young wood in early autumn. We believe that trees grown in Santa Clara valley or along the east side of the bay as far as San Lorenzo, to be far preferable to such as are raised in the vicinity of San Antonio or Oakland, or any locality exposed to the cold, raw sweep of the Golden Gate winds; because these winds produce a climate peculiarly local in its character, and producing a vegetation alike peculiar, and illy adapted to the condition of dissimilar climates.

By examining our advertising pages, it will be seen that those in want of trees, need go no further, in pursuit of particular varieties or fine healthy stock.

**THE ITALIAN HONEY BEE.**—Besides the stingless honey bee, there is yet another variety, the Italian, and known to be superior in more respects than one, to the common American bee. We are indebted to the *Farmer and Gardener* for the following letter in relation to this newly imported bee.

*Editor of Farmer and Gardener.*—SIR:—I have just returned home with a few colonies of the purest Italian bees that could be found in Europe. I obtained six colonies, from August Baron Von Berlepsch, whose magnificent apiary is located at Tambachsoff, about fourteen miles from Gotha. The Baron is one of the most enthusiastic, and successful, and gentlemanly apiarians in Europe. I was presented, by Herr G. Klein, of the same place, with a full set of plans of the Baron's "Pavilions," in each of which there are forty-four strong colonies of bees.

I will at an early day furnish them to you, if you should think proper to present copies in your valuable paper to the bee keepers of this country. It would be of great service to the bee keeping "fraternity." I also obtained four colonies from H. C. Hermann, Esq., Canton Grisons. Mr. H. states that to be the native country of the Italian bee. They exist there in their purity. With regard to the peculiarities of the bees above mentioned, it is deemed advisable to mention a few. "The Italian bee" is more industrious and the queen more prolific than the common kind, because in a most unfavorable year, when other colonies produced few swarms and little honey, the Italian colony produced three swarms, which filled their hives with comb, and, together with the parent stock, laid up ample stores for winter, the latter yielding besides, a box well filled with honey. The three young colonies were the best in his apiary.\* The workers do not at most live longer than one year, for though the bees and brood in the parent hive, when the first swarm and old queen left, were of the Italian stock exclusively, few of this kind remained in the fall and none survived the winter. The young queen is impregnated soon after she is established in a colony, and continues fertile during life.

I have ascertained positively, while in Europe, that the Italian (Ligurian) bee stores from thirty to fifty per cent. more honey than the common bee. I know it can hardly be induced to sting, and is better in every respect.

An impromptu convention of bee-keepers met at Gotha to welcome an American bee-keeper, one who was in search of information in Europe. It was moved by Carl Wilhelm Kolb, and seconded by Baron Von Berlepsch, "that" hereafter all bee keepers traveling, either in Europe or America, "should wear on their breast or coat, a gold or silver queen bee, that their occupation might be known, and conversation upon the favorite topic ensue." I have received, since my return, a beautiful gold bee, which I shall assuredly wear, and trust that other bee keepers will adopt the symbol.

Mr. Editor—when I commenced this communication it was my intention to have written more fully, especially with regard to my observations of the "Farming Interest" in Germany, but family afflictions and pressure of business pursuits prevented.

Respectfully your ob't servant,

No. 720 Chestnut street, Philadelphia.

P. J. MAHAN.

\* Captain Balenstein, of Grisons.

**ABOUT ADVERTISING.**—We are occasionally reminded by our patrons, that our prices for advertising seem high, as compared with the prices charged by our cotemporary of the *Farmer*, as we only issue once a month. To such we would put this question: Which would you deem the best for you, the same advertisement sent four times in a month, to the same persons, or to four hundred and fifty subscribers, or once a month to eighteen hundred subscribers?

We would also remind our patrons, that advertising patronage of a newspaper, is just so much taken from the reading matter; whilst, in the *Culturist*, it is always in addition to the regular forty-eight pages monthly; of course attended with additional cost for paper, composition, press-work, folding and binding. Our advertised prices are as low as we can afford; therefore to insert an advertisement at a lower rate is no object to us.

**CALIFORNIA CIDER.**—Any one who would wish to satisfy himself, in regard to there being a genuine article of California cider, made wholly of apples, has only to visit the fruit establishment of J. L. Sanford, 76 Merchant street.

You can there not only see the whole process of grinding and pressing almost daily performed, but you can see and examine with satisfaction the mill and press, admirably adapted to the extraction of the juices of apples, grapes, or any description of fruits. And where they are making apples into cider, would very naturally be the place to buy your supply of apples at the cheapest rates.

**A SENSIBLE LETTER.**—W. WADSWORTH, ESQ.—DEAR SIR: From a pretty careful perusal of the *Culturist* for a year and a half, I have come to the conclusion that there are many ways to get ahead on a piece of land far more profitably, and with less labor and expense, than the old stereotype process of cropping from wheat to corn, and from corn to barley, and from barley to oats, year after year, as is the constant practice of thousands of farmers who seem to act and think as though nothing else can be raised. I am but an amateur myself, and find after a year's experience in corn and wheat, with my very limited means of working, I am no better off than in the beginning, except in the increase of a small stock of hogs, which have in the main taken care of themselves. I want the coming year to initiate a new policy by putting out a few grape vines, a few hop vines, some raspberries, blackberries and chufa; and it is to ascertain whether I could get them through you that I now write you, having noticed in a former number of the *Culturist* your offer to assist persons desirous of getting such things. I expect to have in a few weeks thirty-five or forty dollars, which I can spare for that purpose, and which I wish to lay out to the best advantage; it is a very small sum, but in my poverty all I can raise. I do not know the cost of any of these articles mentioned above, and consequently cannot say how many I want; but of grapes, I want the cuttings (not rooted vines, as they would be too expensive,) from the best one variety of wine producing sorts, with perhaps very few of other varieties as an experiment. Of hops, I want a small lot as a start; and of raspberries and Lawton blackberries—perhaps a couple dozen vines of each. I tried Lawton blackberry seeds last year, and they wouldn't come up. Of chufa, I want a small quantity, and am informed by a brother in Boston, Mass., that they are worth there \$10 per bushel. A friend in Sacramento tells me they ask there at the seed stores \$5 per thousand. Now if my brother should send me a peck to your address by Express, could you not sell enough to pay Express charges and your trouble, and leave me a quart or two to begin on? Or is your time too much occupied to attend to such things? If I should attempt to go after the things myself, I should eat up my little "pile" in expenses, and have nothing left to buy what I want. I could raise excellent sugar cane here also, I think, as corn grows finely, but I should have no money to buy a press and boiler, so I think I must let that go this year. The other things I must have some how or other, and if you can get them and forward to me it will greatly assist me. Please be so kind as to give me an early answer, with the probable cost of the articles mentioned, and you will place me under many obligations.

Yours respectfully,

J. S. S.

POTTER'S VALLEY, Mendocino Co; Nov. 18th, 1859.

[We will at all times favor our patrons, by giving attention to their orders, free of charge. If Mr. S. will have a peck of chufas consigned to us, we will pay the Express charges. Mr. S., we believe, will excuse the liberty we have taken with his letter. It contains a good word for a mixed husbandry, that we wish our farmers to make a note of.—ED. CUL.]

## METEOROLOGICAL TABLE,

For Sacramento, California; being an abstract of Observations made during the month ending October 31st, 1859; Lat. 38°, 34', 41", N.; Long. 121°, 27', 44", W. Hight of the lower surface of the mercury, 41 feet above the sea at San Francisco. The observations are made three times a day conformably with the hours adopted by the Smithsonian Institution. The indications of the barometer are given corrected for capillary action, and reduced to the temperature of 32° Fahrenheit, but not corrected for its hight above the sea level. The rainy days are included under the head of cloudy and foggy, and are also put separately to show the number of days on which rain fell during the month. The force of the wind is estimated and registered in figures from 0 calm to 10 a hurricane.

By THOS. M. LOGAN, M. D.

| OCTOBER, 1859.                      | 7h. A. M. | 2h. P. M. | 9h. P. M. | MONTH.         | AVERAGE OF SEVEN YRS. |
|-------------------------------------|-----------|-----------|-----------|----------------|-----------------------|
| Barometer, Maxima .....             | 30.270    | 30.124    | 30.083    | 30.270 inches. | — 0.005 inch.         |
| “ Minima.....                       | 29.798    | 29.769    | 29.694    | 29.694 “       | — 0.008 “             |
| “ Mean.....                         | 29.977    | 29.927    | 29.926    | 29.943 “       | — 0.052 “             |
| Thermometer, Maxima.....            | 63.00     | 83.00     | 73.00     | 83.00 deg.     | — 0.54 deg.           |
| “ Minima.....                       | 49.00     | 61.00     | 58.00     | 49.00 “        | + 2.20 “              |
| “ Mean.....                         | 56.19     | 70.04     | 63.61     | 63.28 “        | + 0.98 “              |
| Force of Vapor, Maxima.....         | .413      | .464      | .524      | .524 inches.   | — .013 inch.          |
| “ Minima.....                       | .186      | .218      | .204      | .186 “         | + .026 “              |
| “ Mean.....                         | .320      | .370      | .411      | .367 “         | + .020 “              |
| Relative Humidity, Maxima.....      | 85.00     | 73.00     | 82.00     | 85.00 per ct.  | — 3.98 p. ct.         |
| “ Minima.....                       | 50.00     | 32.00     | 45.00     | 32.00 “        | + 2.70 “              |
| “ Mean.....                         | 71.10     | 51.58     | 70.55     | 64.41 “        | — 1.40 “              |
| Number of Clear Days.....           | 16        | 16        | 17        | 16 1-3 days.   | — 1 1-3 days.         |
| Number of Cloudy and Foggy Days.    | 15        | 15        | 14        | 14 2-3 “       | + 1 1-3 “             |
| Number of Rainy Days.....           |           |           |           |                | — 2 “                 |
| Quantity of Clouds .....            | 1.7       | 1.2       | 1.1       | 1.3            | — 1.5                 |
| Quantity of Rain and Fog.....       |           |           |           |                | — 1.127 inch.         |
| 1st Days and 2d, Force of N. Wind.. | 12 1.6    | 16 2.0    | 4 0.5     | 10 2-3         | 1.4 + 3 1-3 0.0       |
| “ “ N. E. Wind.....                 | 5 1.6     | 1 2.0     | 0 0.0     | 2              | 1.2 + 2-3 + 0.2       |
| “ “ E. Wind.....                    | 5 1.6     | 2 1.5     | 1 1.0     | 2 2-3          | 1.4 + 1 1-3 + 0.4     |
| “ “ S. E. Wind.....                 | 6 1.7     | 1 1.0     | 4 2.0     | 3 2-3          | 1.6 — 1-3 — 0.3       |
| “ “ S. Wind.....                    | 2 2.0     | 4 2.5     | 10 1.4    | 5 1-3          | 2.0 + 1 — 0.2         |
| “ “ S. W. Wind.....                 | 0 0.0     | 4 2.0     | 3 1.0     | 2 1-3          | 1.0 — 1 — 0.6         |
| “ “ W. Wind.....                    | 0 0.0     | 0 0.0     | 3 1.0     | 1              | 0.3 — 1-3 — 0.8       |
| “ “ N. W. Wind.....                 | 1 1.0     | 3 2.0     | 6 0.8     | 3 1-3          | 1.3 — 3 2-3 — 0.2     |

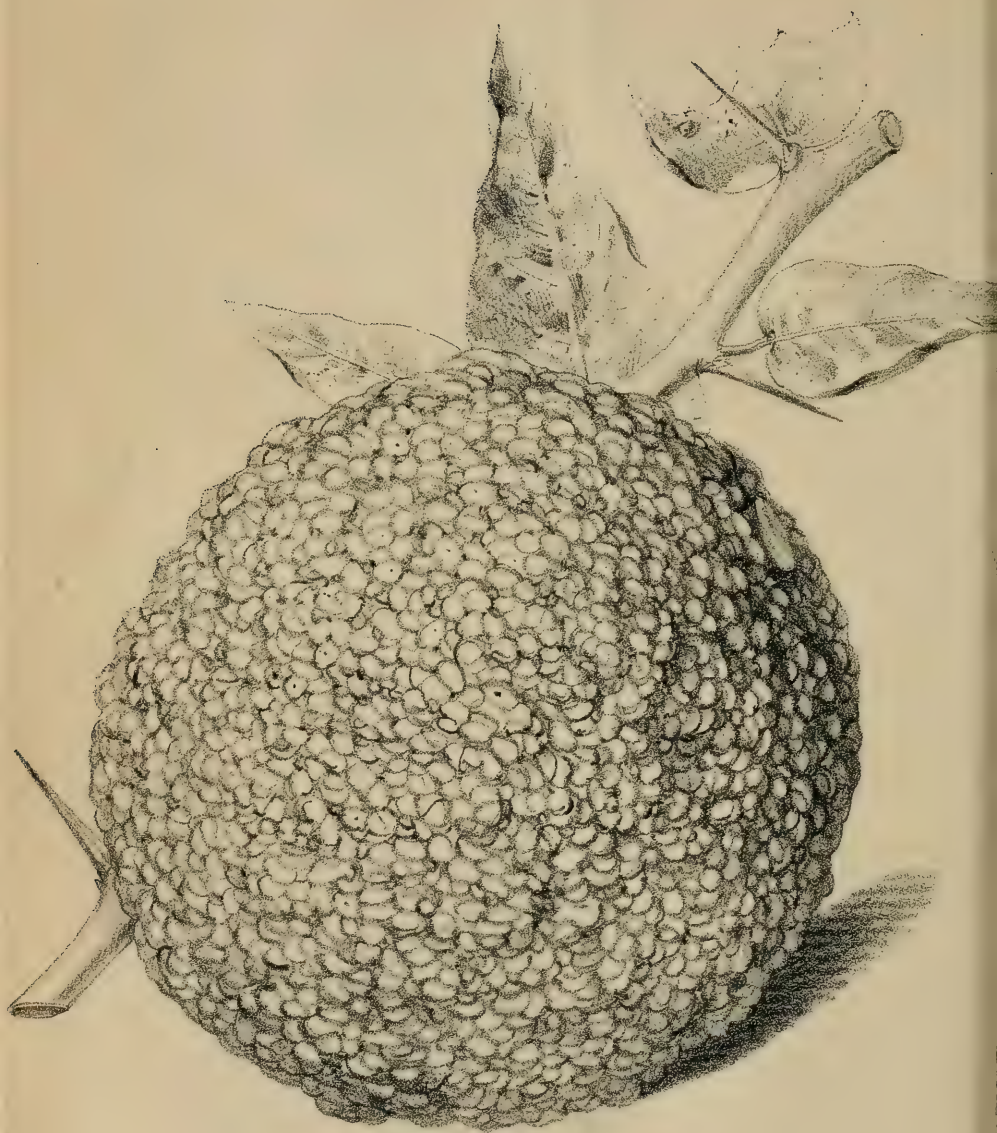
## Thermometrograph.

|                                          | DEG.  |                                                 | DEG.  |
|------------------------------------------|-------|-------------------------------------------------|-------|
| Highest Reading by day on the 2nd .....  | 87.00 | Mean of all Highest Readings by day.....        | 72.16 |
| Lowest Reading by night on the 17th..... | 43.00 | Mean of all lowest readings by night.....       | 50.84 |
| Range of Temperature during month.....   | 44.00 | Mean daily range of Temperature during mo. .... | 21.32 |

REMARKS.—Accounts of showers in various parts of the State, together with a temporary rise of one foot in the river on the 23d, announce that the rainy season is at hand. For two weeks past, also, the migratory movements south of wild geese have indicated the cold approaching from the north. As yet, however, we have not been favored with even a sprinkle in this locality, while during the corresponding month last year there fell 3.010 inches of rain. This difference of seasons has characterized most of our past observations—the result of which thus far go to show that while the extreme periods of beginning and cessation are well fixed in the average of years, the rains are sometimes much later or much earlier than their average, and sometimes in great excess as well as in great deficiency. The practical point to be derived from this peculiar instance of periodical phenomena putting on non-periodic forms, is that the cultivator of the soil cannot depend upon the rain alone, but must be prepared to supply the deficiency, whenever it occurs, by irrigation. Colton long ago remarked the effect of this irregularity on cultivation —“some of the largest crops that ever rewarded the toil of the husbandman have been gathered in California; and yet those very localities, owing to a slender fall of winter rains, have next season disappointed the hopes of the cultivator.” In verification of our deductions made in August last, October has proved as warm as if it were a summer month. We experienced a few days of rather cool weather about the middle of the month, and on the 17th a smart frost occurred in the exposed parts of our suburbs; but the weather soon changed warm again, and on the 25th the thermometer rose as high as 83 degrees. Another appearance of the Aurora Borealis—the third of the season—was observed on the morning of the 18th, at about 3 o'clock, in the northeast; thence it spread toward the east, shooting up streamers of variable hues, of which the most vivid were apparently directly north. The phenomena continued until it blended with the morning light.







OSAGE ORANGE

T H E

# CALIFORNIA CULTURIST.

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J A N U A R Y, 1860.

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HORTICULTURE OF CALIFORNIA.

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BY WILSON FLINT.

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CLIMATOLOGY AND METEOROLOGY.

WHILE treating upon the horticulture of California, it must be borne in mind that the meteorology, or dry and rainy seasons, are the same all over its great extent of latitude and longitude, though the climate is more varied, as regards heat and cold, humidity and aridity, than that of any other territory, of equal extent, on the globe. During the summer season, cold winds sweep down from the ice regions of North eastern Asia and North western America, which are called the north west trades. These winds, as they approach the coast, meet an under eddy current of heated air, reflected from the land, and an occasional puff from the calm latitudes of the tropics.

This hot air, being forced down upon the surface of the water by the undeviating course of the northerly trade winds, condenses a vast volume of fog, reaching but a little distance to sea, but finding ingress upon the land wherever a depression is found in the coast range of mountains, which rise, in most places, above the currents of the trade winds, from Oregon to San Francisco. From the latter point to the bay of Monterey, the land formation is low, so that no obstacle is presented to the march of the fogs and cool winds into the interior, whose daily humid visitation adds much to the comfort of animal life, and promotes, in a marked degree, the success of agricultural and horticultural pursuits. The effect of this climatic influence upon three leading fruits, the apple, peach and grape, is very noticeable; as upon the first its cooling moisture is favorable, while with the two latter it is highly detrimental—as will be shown more in detail. On the north, the track of the ocean winds crosses the lower part of Sonoma, Napa, Solano, Yolo and Sacramento counties,



seldom reaching above Sacramento city. Its southern margin takes in a portion of Monterey, all of Santa Cruz, San Mateo, San Francisco, Alameda, Contra Costa, and a part of San Joaquin counties, seldom extending beyond Stockton; while its effects are visible over the northern portion of Amador, all of El Dorado, and the southern part of Placer counties—the vegetation there having a soft velvety appearance wherever the breeze came from seaward; while with a north wind, it was parched and crisp.

I have dwelt thus much on the climatology of the state, because of its direct effects upon orchard and vineyard enterprises; and at the risk of being considered dogmatic in my opinions, I assert that, for extensive apple plantations, a cool temperature and moist atmosphere must be sought; not that I would discourage the amateur and votary of experiment, from trying its culture everywhere; but when abundant and saleable crops are the desired object, and the longevity of the tree is had in view, inquiry as to soil and locality should be a primary consideration, by those proposing to invest capital, time and patience in this precarious pursuit. California presents the anomaly of the fruits of the tropical and temperate zones, flourishing side by side, yet each is matured, in a greater or less degree of perfection, as corresponding soils and climates, to which they are indigenous, are selected for their production.

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**WINTER IRRIGATION.**—Upon the acquisition of California by the American people, it was supposed by all new comers, that artificial irrigation was requisite to success in the cultivation of any kind of crops; and one has only to consult the early files of the newspapers published in the country, to be reminded that, no longer than ten years since, it was a subject of congratulation to our gold-seeking people, that the Sandwich Islands were in reasonable distance of the placers, so as to furnish supplies of fresh vegetables, such as potatoes, onions and pumpkins; no one then dreaming that in half a decade, this entire state was to grow on her own soil, the products of every clime, and in such abundance that the markets of our cities are the pride of our citizens and the wonder of strangers; and all this, too, of a quality to defy competition, and mainly raised without the aid of artificial irrigation.

The subject of irrigation involves the science of vegetable physiology; and the limit to which I must confine this essay, will permit no elaborate treatment of it at this time; suffice, however, to state that vast injury is annually being done to young orchards and vineyards, by an indiscriminate use of water. Where the water is turned on to the land as soon as the rainy season closes, the plants and trees, owing to the coldness of the ground, and the drowning effects of an excess of moisture, have a sickly, yellow appearance until late in the season; and where water is not applied until the ground becomes dry, it induces the emission of a quantity of fibrous surface roots, which afterwards perish, unless the water is kept on in copious supply, which, being done, the tree makes a sappy growth of wood, unripened at the approach of winter. I do not wish to be understood as condemning irrigation, but only its excessive and illtimed application. The most beneficial use of the artificial application of water which I have observed is copious winter irrigation, which can be had

on almost every acre of arable land in the state, at a moderate outlay of money, if properly undertaken, as will be seen by taking Yolo county as an illustration. During the rainy season, Putah and Cache creeks discharge a vast body of water into the tule. Now were dams made at the foot of the hills, and these streams turned into ditches and carried over her great plains, her farmers would be able to raise sufficient grain every year to supply the state; whereas, owing to our late dry winters, there crops have been almost total failures. The expense of this mode of irrigation is, when apportioned among many, but a trifle compared to the annual losses sustained by drought. Our soils being deep and naturally retentive of moisture, winter irrigation would form vast reservoirs, which, cultivation of the soil during the summer, would produce capillary attraction of the moisture to the surface through the dry season, ensuring the healthful and natural maturity of crops.

**THE APPLE.**—The best soil for the apple in this state is a black, gravelly loam, underlaid by a calcareous, clayey marl, of which there are vast beds in many of the valleys bordering our numerous bays and rivers; next to this a sandy loam with a compact undersoil, to prevent leaching. Red calcareous clay lands should be avoided, as too heating for this fruit. Much controversy is had respecting the mode of cultivation, so as to encourage surface or tap-roots. My experience is in favor of surface feeders, which are within the reach of atmospheric influence; such cultivated trees come into bearing sooner and produce finer flavored fruit. It is noticeable that, on the deep alluvial bottoms of some of our rivers, where the tap-root penetrates to a great depth, that the trees make a prodigious growth of sappy, spongy wood, destitute of fruit spurs. It remains to be seen whether such trees, after they shall have obtained great size and age, and have thrown out side roots which will arrest the descending sap and render the tap-root less influential in its action, will not make up in quantity at a future time, for their failure in not coming into early bearing. In all of our great valleys and over the rolling hills, we are subject to violent storms of wind at the change of the seasons, both in the spring when the blossoms are setting, and in the autumn before winter varieties have ripened; therefore it is a matter of prudence to cut the newly planted tree down so that it will form a low head; thus the branches, being near the roots, the action of ascending and descending sap is rapid, and the trunk of the tree becomes stocky and able to resist the gales which blow off most of the fruit on those trained up in whip-stock fashion.

Another advantage of low pruning is that the tree is kept in reach of the pruning knife, and where the tree comes into bearing, a great saving is made in gathering the fruit; as where labor is high and likely to remain so, and fruit shall be cheapened, the difference between picking the fruit while standing on the ground, and climbing a ladder is a large item. But there is another reason in favor of low training more important than all others. The fruit growing season on the Pacific coast, is subject to an almost endless sunshine, and when the trunk and branches are exposed to its constant rays, the bark becomes dry, and vegetating action ceases on all of those parts affected, premature decay takes place, and what little inferior fruit it produces

will be blistered, to a greater or less extent, and subject to the dry or bitter rot.

Scarcely too much pains can be taken in selecting healthy, young trees, and in thoroughly preparing the ground for their reception—as the after success of an orchard depends, in a great measure, upon this prerequisite, and the care it shall have the first two years, when the roots will be established, and the top have received the general form which it will afterwards retain. Dig broad, deep holes, throwing the top soil, and, if convenient, a few spadeful of manure into the bottom, and be careful not to plant the tree deeper than its natural position in the nursery. Many trees are lost, because their roots are placed so low that the early warmth of spring expands the buds before the earth has become sufficiently warm so as to form the granulations, and force the emission of fibrous roots, in time to sustain the incipient shoots. Years of experiment, as a nurseryman and orchardist, have satisfied me that orchards should be planted, in this climate, as early in the fall as practicable—even before the trees shall have cast their foliage, as some portion of the sap being up, its descent aids materially in forming the granulation of the roots and, the ground being warm in the fall, the emission of spongioles takes place during the reception of the early rains, and harden into rootlets through the winter, so as to give a supply of food to the buds on breaking early in the spring. I consider that trees sustain no injury by removal after the first of November, although the leaves may have to be stripped off by hand and the tree reset in dry soil—as by that time the weather is cool and the newly stirred earth becomes an absorbent of moisture from the humidity of the long nights.

**THE PEAR.**—Experience is demonstrating that the pear withstands the vicissitudes of climatic influence far better than the apple; and it is a subject for congratulation, that its extensive culture, in all parts of California, is destined to meet complete success. Of all fruits, perhaps none are so adapted to general use, as an article of food, as the pear. Its inviting aspect, sprightly vinous flavor, sugary, melting, aromatic taste and nutritious ingredients, should commend this fruit to an increased and extensive cultivation; succeeding equally as well and coming almost as soon into bearing when worked on its own stock as when dwarfed on the quince, scarcely any choice can be made as to which is most preferable, it being rather a matter of locality as regards exposure to strong winds, the dwarf being of a habit which can be trained to the height of a field of grain, at which height little injury would be perceptible in the most exposed situations. The remark is frequently made that pears grown on the quince stock are of a more melting flavor, than those produced on standards; the natural inference being that, as the pear root is of a tap tendency, the small feeders are at a great depth, where the ground is cold, consequently the food sent up gives the fruit a coarse, watery, gritty character; while the quince root, being a surface feeder, is within the influence of light, heat and air, requisite to the healthy functions of the tree. Much complaint has been made of the ill success attending the culture of dwarf pear trees in this state; now success is, in a measure, owing to the fact that, at an early period, some nurserymen, owing to the scarcity of imported stocks, used the California Mission quince to propagate trees on—a stock totally worthless for



that purpose, as the trees worked on this variety make but a feeble growth and soon perish.

Another cause of failure is the planting of the trees on bad soils. The dwarf pear requires a moist, rich situation and clean cultivation; with these requisites, when worked on the right kind of quince, its extensive cultivation will prove highly remunerative. A prejudice exists against dwarf fruit trees, for large plantations, because it is alledged that they are shorter lived than standards. Now, as early fruiting is a paramount object in a country where fruit is scarce and high, it will be seen that dwarf plantations will repay the outlay before standards have produced samples of fruit; and, although the dwarf requires a better soil and more expensive cultivation, yet no investment will pay a better return. It is a stupid error to suppose that after carelessly planting trees, they can be left to neglect, and survive or ever give satisfactory returns. In the Atlantic states, trees neglected in this way sometimes struggle into bearing condition, because there they have the aid of periodical summer rains; but in this state the reverse is the rule, and this accounts for the vast number of fruit trees which have annually been sold by nurserymen, two-thirds of which, it is safe to affirm, have perished.

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**THE PLUM.**—This fruit has proved to be an abundant, certain bearer in all parts of California; not only on the coast in the sweep of the fogs and ocean breezes, but in the hot valleys and in its indigenous state, on the highest ranges below the bald peaks of the Sierra Nevada mountains. Its cultivation should be largely extended, particularly of the Damson and Prune varieties, for purposes of preserving. Scarcely a limit can be fixed to the demand for the Prune of Commerce. Exemption from the diseases to which this tree is subject, in most all other countries, and our cool nights which prevent the ravages of the curculio, render the culture of the plum, on a large scale, a matter of certain profit; and for hedges to surround vineyards and dwarf fruit trees, it is peculiarly adapted, as it is of rapid growth and resists the wind by its tenacious upright habit, and requiring little aid from the pruning knife—a thick set hedge is no detriment to its bearing fruit.

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**THE CHERRY.**—This delicious and cooling fruit has not yet become plenty, although giving great promise wherever it has had a trial. Low training, so that the branches shade the body to prevent the sun from cracking the bark, which makes them gum badly, is necessary to the health of this tree—and especially the pruning knife should be used as little as possible.

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**THE PEACH, APRICOT AND NECTARINE.**—These three fruits possess the same general characteristics, except in the range of the coast winds, where the peach and nectarine are subject to the curl of the leaf, occasioning the loss of the fruit and the denuding of the tree of its first spring foliage. Scarcely a fair crop of peaches has yet been obtained from any of the large peach orchards in the fog range; and it is a noticeable fact, that of the immense quantities of fine peaches, to be found in the

San Francisco market, during the season, most of them are received from orchards in the neighborhood and above Sacramento, or the north part of Sonoma and Napa valleys.

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THE FIG.—Those especially from the Mediterranean, grow to great perfection in most all parts of this state, out of the immediate effects of the cool and moist atmosphere of the coast. Enterprise could not fail of success by engaging largely in the culture of this fruit for purposes of packing for export.

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SMALL FRUITS.—As the blackberry, raspberry, strawberry, currant and gooseberry, may be said to succeed very well in the moist districts of the coast range; but in warm, dry localities their extensive cultivation cannot be recommended, except in moist situations.

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THE GRAPE.—Upon the culture of the vine, the writer hopes to be pardoned for indulging in extended remarks; believing that this branch of industry is destined, in no long time, to become the leading pursuit of California enterprise; associated as the vintage is with various manipulations of manufacture, utensils for packing, storage, marine commerce and monetary exchange. It is admitted that in all countries, national and individual prosperity depend upon the proper economy of labor, and a multiplication of the industrial pursuits. This truism has been lost sight of by the farmers of California, who, as a general thing, occupy all of their available land either for a crop of wheat or barley, depending on a distant market for their supplies of meat, vegetables, and sometimes hay for their teams, subjecting themselves to an expense which often swallows up the proceeds of their solitary resource. To this lack of a proper division of crops can be attributed the precarious business of farming, as many of the great producing districts of the state are subject to such frequency of inundation or drought, that the grain crop is quite as often a failure as success. Now over large districts of the great valley of Sacramento and San Joaquin, extending up into the foot-hills of the mountains, are lands of sufficient extent to occupy millions of people in the cultivation of the vine; and were joint stock companies formed, for the purpose of bringing out the rivers at the foot of the hills to aid in the planting of vineyards, I think capital so invested would be far more remunerative than, when outlaid in fluming rivers for golden treasures, which most frequently, in such undertakings, are found to have taken "to themselves wings."

Was every farmer to plant five or more acres of vineyard, he would be sure to find a ready cash market for his grapes, by hauling them to the wine-maker, and there would be little more trouble or expense than in the cultivation of an equal number of acres of grain, while the receipts would be so vastly in favor of the vineyard that there could be no comparison. The wine market cannot be readily overstocked; while the wheat is of such periodical fluctuations as often to entail disaster, because much of its value is consumed in freight and wastage when seeking a market abroad; while

on the article of wine, benefits are acquired by a voyage at sea, more than counterbalancing the cost of shipment and accruing interest.

Of the manner of planting vineyards and the various operations connected therewith, I beg to refer to the treatise upon the vine, furnished the State Agricultural Society for their 1858 report, by Colonel Augustine Haraszthy, of Sonoma, as the value of that report, by this intelligent and practical vintner, can never be too highly estimated; and were large editions of this essay scattered broadcast among our people, it would materially aid the development of this growing interest.

Much doubt exists as to the kinds of grapes most desirable to cultivate—future experiment can only solve the problem. However, no risk can be ran in planting largely of the California Mission, the Catawba, Black Hamburg and all other strong growing sorts. The Mission grape seems particularly adapted to this climate, as it is a very strong grower and will make a good stock to graft the more feeble foreign sorts on; thus large vineyards can be expeditiously changed to any variety which shall be discovered to possess the best qualities for wine-making. All of the delicate foreign grapes come to great perfection, in open culture, throughout our grape-growing districts; but whether they acquire the high flavor and aroma of their native districts, where the nights are warm, is a question; for, be it not forgotten, all over California the nights are cool. This phenomenon presents to my mind the only obstacle against our state becoming famous for the production of the richest vintage of all vinelands.

Most of our citizens coming from portions of the Atlantic states and Europe, where the vine is little cultivated, much ignorance consequently exists among them, with regard to the habits of the vine and its proper treatment; the prevailing error seeming to be the selection of rich, moist soils for vineyard sites, where a rank growth of wood is secured at the expense of quantity as well as the quality of the fruit.

The most desirable site for a wine-producing vineyard, is a red soil intermixed with the debris of volcanic remains, irrigation being of secondary importance, and mainly useful only in bringing the young vineyard sooner into the bearing of a greater quantity of fruit. On dry soils, the vines should be planted quite near each other and allowed to trail along the ground, which keeps the moisture from evaporating. On deep, rich land, they should be trained up quite high to a stake, so that the sun can warm the ground and stimulate the roots which are apt to run too deep. On planting a vineyard, the young plant, on removal from the nursery, should be exposed as little as possible to the sun or a cold wind, as the root of the grape is very sensitive. When it is desirable to plant cuttings in vineyard form, or place them in nursery the first year, they should be taken from the old vines as soon as the leaves begin to drop, while a portion of the sap is up, as this materially assists the cutting in the granulations from which the roots are emitted. By adopting this course, only a small percentage of the cuttings will fail to grow; whereas, if left on the old vines, and exposed to frost, many of the eyes will be frozen as they begin to swell in the warm days of January and February. The effect of early pruning on the old vine is, to bring it into leaf and blossom the ensuing spring, some days before those later pruned and consequently to accelerate in equal ratio the time of ripening; but when it is



desired to retard the vines, on account of danger from late spring frosts, the pruning may be delayed until the sap has begun to rise, the bleeding of the vine being no injury, but rather tending to the strengthening and establishing the blossoms into well regulated clusters and increased fruitfulness, particularly on moist, rich locations where the vine is apt to grow too much to wood, unless checked in this manner. Repeated experiment convinces me, that where the object is to bring a tree or vine into fruiting, the pruning should be done when there is a movement of the sap, either ascending or descending; this applies equally to root pruning as well as top; but where the object is a great growth of wood, then all amputations should be made when the tree or vine is in a perfectly dormant condition, which is sometime after it has cast its foliage, and before the buds begin to swell in the spring.

An intelligent vintner of Los Angeles, reports that the present season has not been as favorable to the grape, in that locality, as in former years, owing to two causes: the first, the ravages of the cut worm which cut off many of the shoots just breaking into blossom; and a species of mildew, caused by a long term of cold foggy weather, while the grapes were in the process of stoning. From these causes, he estimated there would be a loss of ten per cent. in the crop, and that the wine would have less body, but more boquet. However, the vintage was regarded as satisfactory, and was receiving increased attention, which may also be said of all other vineyard localities. Indeed, the statements of the proprietors of small vineyards in the mining districts, are of so encouraging a character, that many persons who have been engaged in mining for a series of years, are now turning their attention to vine-growing, as a more pleasant, and it is hoped, profitable employment.

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### A GRAND HEN SPECULATION.

THE high prices that fowls and their eggs command at certain seasons of the year, induces very many not entirely acquainted with the whole minutiae of fowl keeping, to suppose that the largest possible profits must attend the poultry yard, and that, to embark in the enterprise of egg and chicken-raising, is only to ensure a speedy fortune. To such as are inclined to fowl fortunes, we give the experience of Prof. Higgins, as related in the *American Agriculturist*:

"Since that grand practical joke of classic days, the presenting of a plucked rooster, as a happy illustration of the philosopher's definition of a man, viz: 'a featherless biped,' there has been no such hen speculation as Higgins has just brought to a successful issue. Your readers will recollect this gentleman farmer, as the sagacious individual who imported 'land pike' from Great Britain, with extra bristles, as a rare breed of swine, and fed ruta-bagas at the rate of three bushels a day each, to bullocks, to test their value as an article of food, giving them nothing else.

Last fall, a new idea struck Higgins, and as luck would have it, it was just at the close of a successful shipment of cotton, bringing him in a couple of thousands in clean cash, that he had no immediate use for. He had the means of immediate

realization, and Higgins went out to his country seat, happy as a hen over a new laid egg. He had seen in one of his country papers—for he takes a half a dozen, and reads them—a splendid account of ‘profits on poultry,’ based upon the success of a small farmer’s wife, out in Rhode Island. She kept twenty hens, according to the statement, raised a hundred chickens, and sold two hundred dozen eggs, clearing fifty dollars above expenses by the operation. The hens were attended to at intervals of time, when Mrs. Smith had nothing else to do, so that she could look upon her roll of fifty dollars as so much clear gain.

Higgins was an excellent accountant, and he immediately made a calculation of raising poultry upon a large scale. If, with twenty hens, worth not to exceed ten dollars, fifty dollars could be made, then two hundred and fifty dollars could be made with a hundred hens—and twenty-five hundred dollars with a thousand hens. The stock would cost not to exceed five hundred dollars, and the necessary buildings and fences not over fifteen hundred more. Making a large allowance for disasters, which he could not foresee, he could hardly fail to clear two thousand dollars by the operation every year. This was a better business than any shipping he was ever engaged in, and it would have this advantage, if successful, that he could live at home with his family, instead of being off in the city half of the time or more. To make the thing sure, so that there could be no mistake about it, he put it upon paper, thus:

|                                                                                         |        |
|-----------------------------------------------------------------------------------------|--------|
| 1000 Stock Fowls.....                                                                   | \$500  |
| Rent and interest on buildings worth \$1500 .....                                       | 150    |
| Feed of Fowls for a year, say.....                                                      | 750    |
| Wages of a woman to attend them.....                                                    | 100    |
|                                                                                         | <hr/>  |
|                                                                                         | \$1500 |
| On the balance sheet he might safely calculate at the end of the year on 1000 fowls. \$ | 500    |
| 1000 chickens worth.....                                                                | 500    |
| 100,000 eggs at one cent and a half each.....                                           | 1500   |
| Manure.....                                                                             | 100    |
|                                                                                         | <hr/>  |
| Total value of sales and stock on hand.....                                             | \$2600 |
| Deduct expenses, as above.....                                                          | 1500   |
|                                                                                         | <hr/>  |
| Profit.....                                                                             | \$1100 |

This was figuring very low, and only allowing less than half the profit realized by the Rhode Island woman. He really expected to do much better, for he would have his hen palace so warmly built, that the hens would lay all through the winter, when he could realize from thirty to forty cents a dozen for them. He expected, too, to raise two thousand chickens instead of one, and meant, if possible, to make them shell out over a hundred thousand eggs. He had known hens to lay two hundred eggs a year. Higgins was so well pleased with this speculation upon paper, that he determined to carry it out at once. He selected the southern slope of a hill, covering about an acre, and inclosed it with a high picket fence, so that no intruders should rob him of his expected treasures. In the middle he erected his hen palace, a two story building, with an underground apartment, well lighted upon the south for winter accommodation. It was furnished with any quantity of nests, lined with clean straw, and with capacious boxes for holding bushels of eggs. The peak of the roof was

mounted with a tower, full of pigeon holes and boxes. On top of the tower a huge gilt cock was perched—a very ornamental and useful bird; for at the hour of twelve, noon, he regularly clapped his golden wings, calling all hands to dinner. This device greatly astonished the natives, and whatever might be thought of Higgins and his speculation by his neighbors, this gilt rooster was a revered institution. A town clock, in the shape of a bird, was a novelty even in this part of Yankee land.

Higgins had heard that there was danger of crowding hens into too narrow quarters, and to prevent this calamity, he ran out two cheap wings from the main building, two hundred feet long each, so that he could separate them, in case disease should make its appearance among the fowls—a calamity that he did not at all anticipate.

The two thousand dollars were at length expended, the hen homestead completed, and stocked with a thousand fowls. Higgins was not particularly select in his stock, a hen being a hen with him, whether Dorking, Shanghai, Chittagong, Black Spanish, Jersey Blue, Creole, or Leghorn, or a mixture of all these with the Dunghill bird of the natives. He had few thorough breds, except a lot of game fowls, which he introduced on the second week of the experiment. The game rooster treated the the rest of the cocks as game, and killed four of them the first day he was in the yard, before Higgins had time to interfere. This disaster, however, was soon remedied and the fowls did remarkably well until they had consumed all the grass in the yard, and laid out the old litters that had been conceived in their old homes, where they had plenty of room. Higgins was jubilant for a couple of months, and eggs were sent off by the barrel, to the New York market, during the months of October and November, last year. As the winter set in, and the fowls began to feel the effects of their confinement, the laying began to grow 'small by degrees and beautifully less,' until a dozen a day was the utmost laying capacity of the whole establishment. A cold snap came on in January, and all the egg fountains were sealed up, as tight as the water in the fish pond. 'Nary egg' was the stated morning report of Bridget, for three weeks. The roosters crowed lustily, and the hens clucked and cackled, as if they were getting ready to do a big business, but they did not shell out.

As the spring opened, the egg fountains were again opened, but in diminishing numbers. The hens indeed laid, some of them eggs, and other some laid low. Many of them were minus toes, badly frost bitten, some were lame, and a great many were diseased with the staggers, and fluttered about as if they were badly corned. The result of the speculation comes out in the following conversation, which occurred as I alighted from my wagon at Higgins' door, lantern in hand.

'I thought, Diogenes, that you gentlemen of the agricultural press, represented poultry-raising as a highly pleasing and profitable business; that no stock on the farm began to pay so well.'

'That is true, if you know how to take care of them, and do not get so many on hand, as to have them interfere with one another.'

'Well, I tried last fall, got all the fixings ready, at a cost of two thousand dollars, had plenty of eggs for two months, and then the fowls began to droop, and I have had more or less of them sick ever since.'



‘Why didn’t you sell them, Higgins?’

‘Nobody would buy, because they were afraid of diseased fowls, and I dare not eat them myself, for the same reason. I am now in a pretty fix, can’t sell, can’t give away, with as pretty a hospital on hand as any doctor would like to attend. Guess I will lose five hundred dollars by the experiment, clean cash; glad to get off so.’

‘Boarding is excellent business, Higgins, but you should not put a hundred people into rooms meant for ten, some of them might leave.’

‘Just so, I see, half of mine have left already.’”

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### CRANBERRY CULTURE.

*Editor Culturist*:—California imports largely of the cranberry, not only from Oregon, but from the Atlantic states, and the demand is positively on the increase, which is quite the reverse of what is true as regards almost any other description of wild or cultivated fruit. There seems really no fruit or other berry that can well supply its place; the question, therefore, has occurred to me: can cranberries be grown in the climate and soil of California; or must it be said that, for our supply of this valuable fruit, we must always look abroad. I believe we ought to be able to raise our own supply; I believe we can do it; more than this I am determined to try, and now my object is to make inquiry and, if possible obtain some reliable information in reference to soils the best adapted to the growing of this valuable berry.

I notice a very great difference in the size of the Atlantic and Pacific coast cranberry; the former being decidedly superior to the latter. Does this arise from a natural superiority of one variety over the other, or something in the soil or climate of the Atlantic over the Pacific coast favorable to this one particular fruit; whilst for all others, our own climate is acknowledged to be greatly superior?

Allow me another question: at what height above the Sacramento valley, if upon suitable soil, can I hope to succeed in the production of the cranberry? I am in possession of one of the very few mountain meadows, of several acres in extent, so perfectly level that, in forty hours time, by a dam but three feet in height and ten rods in length, I can completely flood about ten acres to a depth of four inches. The soil is rich, producing abundantly of mountain clover. Now is such land suitable, and how must it be managed, to fit it in the best manner for cranberry culture? If you can spare the room in your valuable journal, will you have the kindness to lay my inquiries before the readers of the *Culturist* in their present form, or if need be, considerably curtailed of their present proportions?

Truly yours,

CHAS. PRESTAL.

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We have personally experimented in the growth of the cranberry with varied success. Our field of operation was in the vicinity of some of the finest natural cranberry marshes in the state of Michigan. We have tried them on low swamp or

or wet prairie, marsh and highland ; and, though our experiments were, in the main, conducted more with the view of establishing the fact that they can be successfully grown upon high land, or land not naturally swampy or marshy, we must admit that we were not satisfactorily successful in our highland culture. Almost all highland is *too rich* for cranberries. There are large tracts of natural cranberry soils in the states of Michigan, Wisconsin and Iowa, and many persons have there turned their attention to the cranberry and its culture. We find in a late number of the *Iowa Pioneer Farmer* an excellent article on the culture of the cranberry, or rather the soils and best mode of preparing them for the culture of this universal favorite, which we appropriate as better answering the inquiries of our correspondent than anything that we can give as the result of recent experiment.

“ In the present chapter we give the location, soils, etc., which are considered the best for the cultivation of the cranberry, from which those acquainted with the nature of our soils and facilities for planting and raising, can soon determine what the best course will be to pursue.

SOILS AND THE MODE OF PREPARING THEM.—‘It is of importance that the nature of those soils in which the cranberry will most easily grow, should be considered, and known to those who intend turning their attention to its culture. Many failures have resulted, not so much from the unsuitableness of the location chosen, as from the hardness of the soil. It is generally the case, that the best and richest soils are selected, as those in which experiments ought to be tried. Failures sometimes occur, not because the climate or season are unsuitable, but because the soil is too rich. If the vine is planted in good alluvial soil, it will do well, apparently, but it will not bear fruit. Such soil will cause the plant to abound with healthy foliage, and a vast quantity of runners, but no fruit. Manuring is wholly out of the question. If it is attempted, it will kill the plants, or in some cases make them grow rank, and they will be worse than they are found to be in their native swamp.

Clay and marl are totally unfit for cranberry cultivation. Either of this class are liable to cake and become hard ; and whatever soil cakes and sogs around the root of the plant, is to be avoided.

*Rocky loam* is not very favorable to the development of the cranberry. The objection which lies against it is, that wiry grass and rushes abound therein. These grasses and rushes are to be guarded against in a cranberry yard, or they will choke the vine. Loam of the kind above named may be made to do, but it will require excessive cultivation, in order to effect anything of importance.

*Heavy soils*, taken as a class, are not of much service ; the grower will do well to avoid them to as great an extent as possible. And, indeed, it is questionable whether the vine can be cultivated at all to any purpose on soils of the above description. The vine may grow on such lands and seem to flourish, but they will not bear ; they are unfruitful, and if so, therefore unprofitable.

The following soils are those which are preferred by the Cape Cod cranberry cultivators. There is one fact which ought to be stated here, as introductory to the

subsequent suggestions and statements, and it will not be amiss for the inexperienced cultivator to remember it. If he bears it in mind, he will avoid many difficulties which have discouraged others. It is this: *Dead sand, water and air*, are the elements upon which the cranberry feeds the best, and attains its highest degree of perfection; therefore that soil and location which has these advantages is best adapted for the growth of the berry.

*Beach sand* stands the first. All other kinds must be rejected if this can be got. Experience teaches us this. Those yards which are wholly bottomed by *beach sands* flourish and yield abundantly—far better than those that have a different soil. During the last fifteen years every variety of soil and situation have been experimented with, and the results are entirely in favor of the *beach sands*. On Cape Cod, the greatest cranberry field in America, situations are sought for where the cultivator can be near to the shore, that he may be able to put on this sand, if it is not on his chosen location.

We will, in this connection, call attention to a small yard with which we are acquainted, which is situated near to the sea shore. It was originally a pond; water stood in the basin, but it was not deep. On the banks and edges of this pond was sand in abundance, which the owner spaded down to the water and continued to fill in. He planted; some said it would not do much, but now it is one of the handsomest yards in the country. Everything seems to be favorable—soil, situation and water—and the result is heavy yields of berry. In this, as many as three bushels have been picked off a square rod; and so well is it now known that situations where beach sand abounds are the best, that the most practical men are buying up such locations with the view of converting them into cranberry yards.

We are acquainted with one cultivator, whose yards produce from two to three hundred bushels of cranberries annually, who has the greatest proportion of his vines planted in the beach sands, and some few in loam. The difference between the two is marked: those in sand are fruitful, those in loam are but small producers. He therefore carts off the loam, or carts upon it beach sand. We could produce a vast body of evidence to demonstrate that beach sand is better adapted to develop the cranberry than any other soil; but the cases adduced are sufficient.

There is another reason, though, which should not be lost sight of, why this sand is so much better than other soil. It is light, porous, and is almost incapable of supporting weeds. It admits the atmosphere freely to the roots of the vine, and is found to be the only soil in which the rank weeds can be effectually kept down. It will thus be clear to the reader that, in such a situation, the plant can throw out its runners in every direction, and having no weed to contend against, will therefore spread readily, and soon become matted—a condition of the yard towards which the practical man looks with anxiety. If you are about to make the attempt to cultivate the cranberry, if possible, obtain beach sand in which to set out your vines, or coarse sand when the former cannot be obtained, but the white is preferred.

*Peat* is found to be excellent, in fact, next in value and importance to the beach sand, for the growth of cranberries; but peat wants management and care in its



preparation, in order to be made useful to the vine. In selecting a peat swamp to be converted into a cranberry patch, it is necessary to take off the top turf, or grass, and if possible give the yard a little incline. When this is done, it is unsafe to plant at once. If you do so, you will find that the peat will in the following summer cake and crack. It will be hard on the surface, and some few inches below stiff and dry. The veriest tyro in cranberry cultivation knows that such a condition is very bad for the vine.

*How is this difficulty obviated?* Prepare the surface as we have stated above, and leave the yard exposed to the frost and weather for one year. When the frost is thawed out of it, it will crumble and be powdery. It will never cake afterwards. It will be light and porous. You may then with safety plant your vines, and with moderate attention they will do well."

### PRIZE ESSAY ON POMOLOGY.

BY WILLIAM SUMMER, POMARIA, S. C.

*To which was awarded the Premium at the Annual Meeting of the State Agricultural Society of South Carolina, in 1858.*

THE blessings of fruit all should enjoy; and, favored as we are, with a genial climate, where nature has done so much in bringing to perfection the choicest and most delicious varieties, it should be one of the universal comforts of life. The arguments which could be brought to bear upon the advantages of fruit-culture, are so numerous, that we will only allude to a few. People of all ages and conditions of life enjoy the delightful refreshment which the juices of fruits bestow. The fondness for the various unwholesome compounds and imitations of fruits, indicate a love for them, and the displacement of *confections* would have a most beneficial effect upon health, for there is no diet so salutary, so refreshing and delightful, both to the young and the old, as ripe, fresh fruits—and there are not a few *diseases* for which fruits are the best remedy. Those whose breakfast, or first food in the morning, is of fresh fruits, seldom suffer from dyspepsia or bilious complaints, as is proven by the inhabitants of Italy, where the free use of grapes and cantaleups are indulged in. The climate is, in many respects, similar to ours. The acid of fruits is a panacea for scurvy, and eruptive disorders. The delicious pear is a perfect remedy for dyspepsia, and ripe peaches have been found to be a specific in summer complaints, and the juices of fruits tend to drive humors to the surface, and to purify the blood, and instances are on record where whole families, with scrofulous tendencies, have been saved and restored to blooming health, by returning back to the simple fruit diet of nature. In Herefordshire, where apples abound in every hedge, and cider is so plentiful as to be the almost common beverage, there is not a case of dropsy to be seen. Doubtless *dram drinking* and intemperance itself would be infinitely lessened, and perhaps utterly banished from our society, by the use of pure and wholesome wines,

made from our own vineyards, and an abundant use of fruits, for the love of ardent spirits is a corruption of the true and natural taste of fruits; and as it has often been observed that those who indulge in the excessive use of ardent spirits, are extremely fond of fruits by nature. Give such an abundance of fresh and wholesome fruits, and they will in time banish from their appetites the liquors and various poisonous mixtures. Surely any effort is worthy of being made to do away with the abominable and degrading habit of *whisky drinking*, which, in the end, will fill our poor-houses with paupers, to be supported by the taxes of the very men who yearly support the government, but who are indifferent to the work of reform. To carry out this object, we would recommend the culture of the grape, and the making of a pure and wholesome wine. In Italy, wine is so abundant that it is sent to the laborers to drink, instead of water; and, although the Italian may be careless and indolent, he is seldom a drunkard. His poor and degraded condition comes not from drinking wine, for with bread and olives, it forms the chief support of the poorer classes; but the fault lies in his oppressive government, and the beggars who come amongst us are from the poorer mountains and unproductive regions, where the principal subsistence of the people is the maron or chestnut. In France, and in Germany, on the Rhine, which is one continuous vineyard, the people are sober and never addicted to drunkenness. There, wine takes the place of coffee with us. These are some of the many reasons, besides the pleasure and gratification which they afford, which make us urge the universal culture of fruits; and we trust the time will soon come when they will be considered indispensable to the comforts and necessities of every household.

As in all culture, so most especially in fruit-culture, *deep tillage* is the principal system. Subsoiling or trenching is absolutely essential, to enable the roots to run down into mellow and rich soil, and thus produce an abundance of fair, large, luscious fruitage. When the ground is thus prepared, and the holes made wide to receive the roots of the trees, large enough to prevent crowding, and care is taken not to plant too deep—for nothing is more injurious—they will, with care and attention, flourish. The proper enriching of the soil, thus deeply tilled, is of hardly less importance. Trees must not only be fed, but every tree must have its appropriate nourishment. One kind of nourishment conduces to the growth of foliage and wood, another tends to fruit; and, while one kind of plant or tree requires a particular element for its subsistence, another demands a far different element. For example, lime is a great absorbent of acids, and thus naturally assists in the elaboration of the juices of fruits. This is particularly observable in the apple, the bark of which is principally made up of lime, which has been thrown out of the circulation as useless, after it has been employed in its vegetable economy. To all trees, doubtless, a vegetable substratum of soil is necessary, composed of decayed wood, grasses, leaves, pond-mud or vegetable molds. But with this alone, without ammonia, and the sulphates and phosphates, or lime, to absorb and retain these, the fruit may be large and fair, but it will be rough, coarse and astringent on one hand, or flat and tasteless on the other. A pear or an apple, on a cold soil, is found to be a different

thing from what it is in a rich, warm loam, with a well drained subsoil. The soil and culture may be difficult to select and adapt to the various fruits, but with a little care and judgement, and the proper food, they may be successfully cultivated, almost in all localities, by observing the following requisites :

1st. *Wood-ashes*, containing as they do, all the elements necessary to their growth, (except carbon, which is supplied from the air) is a congenial element for all trees and woody growth.

2d. That *lime*, whether in the form of marl, shell, plaster, or stone-lime, is a specific for apple trees, and that apples are largest and fairest, grown in a calcareous soil.

3d. That *phosphates*, in the form of bones (which are principally composed of lime) or prepared super-phosphates, are specifics for pears and grapes.

4th. That *ammoniacal* manures, as guano, horse-dung and urine, are specifics for the peach, and give flavor and spirit to all other fruits.

With these general remarks we come to the divisions of fruits which are generally acknowledged by pomological authors :

THE APPLE succeeds well in most portions of our state, and with proper cultivation yields regular and beautiful crops. It is a vigorous and hardy tree, growing in almost any kind of soil, but thrives best in a good loam, with a clay subsoil. A porous subsoil is often more favorable. Some varieties do best upon a deep, sandy loam. All the early varieties require a warm, dry soil, which hastens their maturity. Others flourish best in a strong, moist loam. Late kinds require a cool soil to retard their ripening. For this purpose we have found mulching with leaves, pine-straw, saw-dust, and such material, of great benefit, when applied after a good season, in mid-summer. The fruit will mature gradually, and attain greater perfection, and will keep better during winter. Upon the whole, the apple is one of the most valuable fruits. Some kinds are more luscious and delicate, but these qualities render them transient, while the other varieties endure, and may be had in excellence almost during the entire year. Various other fruits, when duly attended to, will assume far more comparative importance ; yet the apple, from its hardiness, early productiveness, great excellence, and being always in use, either fresh or dried, will, in the main, hold a decided superiority over any other species of fruit. It is useless here to enumerate all the uses to which the apple can be appropriated in the household department, but an excellent writer thus admirably sums up its uses :

"The fine kinds are excellent for the dessert. Besides the pleasure of this luxury and nutriment in rich apples, they have an excellent medicinal effect—they are greatly laxative, and keep the system in a wholesome condition. They serve as a healthy repast for children, who would be eating something that would be injurious from too much nutrition."

Apples are valuable food for all kinds of stock. We not only give them freely to our hogs, but feed them to our milch cows, and frequently to our horses. All seem to thrive, and eat them with good relish ; and we would advise our good housewives to make a plentiful supply of cider vinegar, which is better and much more prefera-



ble to most of the vinegar sold as white wine vinegar, often a composition, from the drugs of which its composed, a slow poison, and destructive to health.

The apple is admirably adapted to the upper portion of our state, where it thrives in great perfection.

If possible, winter varieties should be planted in lowlands along our streams. They would flourish and attain great perfection, as may be seen from the old orchards which were planted forty or fifty years since, along the lowlands of Broad river and its tributary streams. The Hughes Crab has, in many locations, attained the size of forest trees, and bears large quantities of fruit, which cover the limbs with its abundant fruitage, even after severe frosts.

The principal winter varieties introduced from the Northern nurseries, mature too early for winter use, and recourse must be had to *native Southern varieties to supply this deficiency*. This subject has attracted the attention of our fruit-growers, and, within the last seven or eight years, several hundred varieties have been brought into notice, which will compare with any of the best Northern kinds—ripening from October to January, they supply this important want. There are so many varieties worthy of cultivation, that to give a descriptive list of the kinds, would extend this essay to a small volume.\* We would, however, name among the native varieties, the Anderson, Augustin, Cherokee Red, Cook's Red, Davis, Elgin, Epting's Red Winter, Epting's Premium, Foust Frey, Southern Greening, Oconee Greening, Gully, Hall, Hoover, Hopper, Hammond, Carolina Red June, King, Lexington, Lever, Maverick's Sweet, Meadow Woods, McDowell's Winter, Neverfail, Perkins, Clark's Pearmain, Cannon Pearmain, Peakes Red Winter, Price, Shockley Wall, Wander, Walker's Yellow—these are all worthy of a place in any collection. The best distance for planting apples is twenty feet, and the land should be kept in good condition and culture, as no tree can be expected to flourish and produce good fruit if neglected. The trees should be branched within two or three feet of the ground, and a low spreading top should be encouraged by judicious pruning and training.

The apple is subject to the attack of several insects—the *bark-louse*, the *catterpillar*, the *canker-moth* and the *blight*.

For eradicating the bark-louse, we use alkaline washes, made of potash, at the rate of one pound to two gallons of water, applied with a painter's brush in spring, just before the buds begin to expand their leaves; but a preparation of soft soap, of the consistency of cream, is the safest and best remedy we have yet tried. This, with the addition of a compost of chip, rotten leaves, etc., to assist in giving a good growth, will soon cause the trees to flourish and overcome this troublesome and destructive insect.

The *catterpillar*, some seasons, do immense injury. The best mode of destruction is, to cut off, during winter, the branches upon which they have deposited their eggs,

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\* We shall, as an appendix to this essay, give complete lists of all fruits worthy of cultivation in the South.

and burn them. Every nest of eggs thus removed—which is done in a few seconds—totally prevents a nest of caterpillars in the spring; but when these appear, no time should be lost in clearing the trees of them. Soap suds, in which salt has been added, and applied by means of a sponge at the end of a pole, is the best method to rid trees of them, when they have made their appearance. Salt water, injected into the web with a syringe, is also effectual; so, also, is tobacco water.

The *borer* (*saperda bivitatta*) is an insect which enters the tree at a bud, and cuts into the solid wood, frequently doing immense damage. The first indication of their presence is the appearance of small round holes. The best remedy, in young trees, is to cut off the branches below the entrance of the borer, in order to save them; or they may be destroyed by running a piece of wire into the hole; but, as preventive is better than cure, we would advise the tree to be kept smooth and clean, and well washed with some alkaline solution, such as has been recommended, to which add a little sulphur. The insects would then be prevented from harboring, if this was applied in June or July.

The *apple worm*, or *codling moth* (*carpocapsa-pomonella*) was imported from Europe. During the latter part of May, these moths lay their eggs in the eye, or blossom end, of the apple, and sometimes in early pears. They hatch in a few days, and the worm eats into the apples, and, in a few weeks, attains its full growth. The apples ripen and fall prematurely. Soon after the apple falls, and sometimes before, the worm crawls into the crevices of the tree, or other places, and spins a cocoon of a white, delicate web, where it remains until the next season. It is quite probable that, with us, it comes out and produces a second generation. The only remedy that is available is, to permit swine to run into the orchard and eat the fallen fruit. By scraping of the bark of trees in spring, many would also be destroyed.

The *canker worm* (*anisopteryx pometaria*) affects the apple, the quince, mountain ash and hawthorn. One of the principal remedies which has been tried is, to prevent the female from ascending the tree to deposit her eggs; but none have yet been discovered as easy, safe and effectual appliances. One of the best is, to encircle the tree with a canvas belt, coated with a mixture of tar and train oil, to be renewed several times. Applying the tar directly to the tree is injurious. A species of *aphis*, infesting young trees, is easily destroyed by the use of whale-oil soap, and by lime-wash.

The *blight*, which sometimes kills the terminal shoots of the branches, has been variously ascribed to the sting of an insect, and the effects of the heats of summer seasons; the cause has not been satisfactorily ascertained. It rarely proves a formidable disaster. The young trees are sometimes disfigured by it, and, for a time, checked in growth. We have always cut off the branches and burned them. There is frequent complaint of the rot in the apple, but it is owing to a deficiency of lime in the soil; and where this is added the apples will be found to mature perfectly. The upper districts produce the finest and best flavored apples; but we have seen fine specimens of winter varieties grown as low down as Orangeburg district. Even on the sea-coast good early and autumn varieties have been grown. For the latter

locality we would recommend those grown on the Paradise or Doucien stock, which dwarfs them, and brings them into early bearing.

**PRUNING.**—In pruning, the principal object is to give form to the tree, and to promote the vigorous growth of the shoots and branches, and to check the growth of certain parts, in order to produce fruit. Every young tree needs attention, but in pruning off the side shoots, it is better only to remove a few of the larger ones at the bottom, and pinch off the ends of all the rest, which directs the sap into the leading shoots; the tree then advances in height and at the same time enough is left to form wood on the stem and to stiffen it, and furnish stout, well-proportioned trees. When a side shoot is disproportionately large, it should be cut off closely at once.

By treatment similar to this, any form may be given to a tree, as the sap tends to all parts of the tree. If we wish to alter the form of the tree but slightly, shortening the tips of the shoots will be sufficient. An even, well-balanced, well-trimmed head for standards, may then be easily obtained. But other adaptations must be made to the habit of the tree. Some varieties, as the Early Strawberry, are remarkable for their leading shoots; with others, like the Aromatic Carolina, form, almost naturally, a wide spreading head, requiring little pruning after coming into bearing.—*Farmer and Planter.*

[ TO BE CONTINUED. ]

**IMPORTANT TO GARDENERS.**—A gardener having occasion to newly paint the wood work in his green-house, determined to make a trial of the theory of absorption of heat by black color, with the view of promoting the maturity of his plants and shrubs by means of a greater quantity of caloric. In the preparation of the paint, he used coal tar—that is to say, tar produced by the distillation of coal in the manufacture of gas. This coal tar, besides the advantage of its color, offers considerable economy in painting, being one-eighth the price of the material generally used in mixing black paint. The painting here in question was executed before the setting in of winter. On the return of spring the gardener observed, with no less surprise than satisfaction, that the spiders and other insects, which had infested his green-house, had totally disappeared. He, moreover, remarked that a vine, trained on an espalier, which, for the space of two years, had been sensibly decaying, and which he had proposed to uproot, for the purpose of planting another in its place, had acquired such renewed health and vigor as to be capable of producing excellent table grapes. Having applied his new paint to the props, treillages and espaliers of all his sickly trees and shrubs, as well as those which, though all in bloom, were being devoured by insects, success again crowned his experiment. Catterpillars and snails disappeared, as the insects had vanished from the green-house. The fruits produced by the trees thus treated, have elicited the approval and eulogy of purchasers. Similar experiments tried on the Gironde have, it is said, been attended with similar results.



## PROPAGATION OF THE BLACKBERRY.

A CORRESPONDENT of the *Country Gentleman* gives a valuable hint in regard to the propagation of the blackberry, which may be found interesting to those who may have the plants to operate upon. He says:

"As the cultivation of the blackberry is deservedly attracting a considerable share of public attention, the rapid multiplication of good varieties becomes important, to secure a supply at reasonable prices; and having had a little piece of experience in propagating the Lawton blackberry the past summer, which has been pleasing to me from its simplicity, ease, and rapidity, I wish to give it you for the benefit of such readers of the *Country Gentleman* as are as ignorant as I was on the subject, if there are any such.

Having occasion to take up a block of plants, I thoroughly worked the ground over and secured all the roots I could, which were cut into pieces of from three to six inches in length. These we bound in bundles of from three hundred to five hundred, and buried in sand in the cellar, where they remained until quite late in the season—probably about the 20th of May, when we took them out for planting, and were agreeably surprised to find shoots starting on nearly every root. We dropped these so as to lie horizontally in broad drills, opened with a hoe, the same as for apple or pear seed, in rich, mellow, well prepared soil, and covered about two inches deep.

In two or three weeks the plants began to make their appearance—feeble at first, but gathering strength with their growth by sending out numerous side branches, until now (Oct. 1st) many of them are of good size for setting out, and still growing very fast.

This method of propagation is quite likely familiar to many; but not having noticed it in print, I have remained in ignorance on the subject, although I have suspected for some time that particular persons were increasing their stocks in the same way, more rapidly than by suckers.

From what I have observed of the manner of growth of the blackberry plant, I conclude that good sized roots, cut up and treated as above, are about as certain to grow, if used with care in regard to exposure to sun, wind and frost, as potatoes, or quack grass even.



TIME OF PICKING APPLES.—A writer in the *New York Tribune* tells us that G. W. Browning, of Luzerne county, Pa., some years since accidentally discovered that winter apples, picked some five or six weeks before the usual time of gathering, would keep sound some months longer than those allowed to ripen on the trees. Since that time he has picked his apples early, and reserved them for the spring and summer market, thus obtaining much higher prices than if sold in the fall or winter. Whether any effect upon the flavor and quality of the fruit was observable, is not stated.

## LAWTON BLACKBERRY.

*Editor Cultivist*:—As this plant is attracting considerable attention just now, I thought my experience in its cultivation might interest some of your numerous readers. The marvellous stories of its wonderful productiveness in the Atlantic states, led me to think it might succeed as well here. Having a favorable opportunity, I determined to try the experiment, and accordingly purchased five hundred plants of Mr. George Seymour, in South Norwalk, Ct.

My plants were taken up and packed in January. I was intending to leave early in February, 1858, but did not till March 20th, and arrived at my place about the middle of April. In consequence of their being delayed at Folsom nearly a week, we did not get the plants into the ground till near the first of May. The ground on which they were to be placed had previously received a pretty thorough application of manure—it was also well pulverized. As it was evident that the dry season was about to commence, I determined to give the plants a good start, and had the holes about half filled with earth after the plants were set, and then turned in water till the ground around and below was thoroughly saturated.

During the summer, the ground was irrigated, and loosened with the hoe and cultivator, as circumstances seemed to require. We did not get a large growth the first season. In the winter we cut away about one-third of the growth of the previous season. Early in the spring they began to send up large plants from the roots around, sometimes as many as ten or fifteen. These grew very rapidly. When they had attained the height of five feet or more, the top was cut off; soon they sent out side branches on every side, four and five feet long, and sometimes more. We watched their progress with great interest, looking for every indication of fruit. The wood, grown one season, bears fruit the next. Soon, from every leaf stem a cluster of beautiful white blossoms appeared. The fruit came on apace. Ordinary clusters contained from eight to twelve large berries. The fruit, when fully ripe, is soft, juicy, sweet and most delicious. The seed cells are large and full; the pulp tender, and the entire berry, as soon as it touches the lips, is esteemed equal to the fabled nectar of the gods.

M. S. R.

DIAMOND SPRINGS, El Dorado County.

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TOMATO WINE.—Now that tomatoes are more abundant than they have been known to be in former years, the following recipe for making from them a wine, said to be equal to Heidsieck, will be read by everybody: Take small, ripe tomatoes, pick off the stems, put them into a tub, wash them clean, and then strain them through a linen bag. (One bushel will make five gallons of pure wine). Add two and a half to three pounds of loaf sugar to each gallon, then put into a cask and ferment, and fine as raspberry wine. If two gallons of water be added to the five gallons of juice it will still make a very nice wine. Brown sugar may be used instead of loaf, but the wine is much more sparkling when loaf sugar is used. The United States might export wine by the ship load. It is said to be a delightful beverage—equal to Heidsieck.

MANAGEMENT AND FOOD OF BEES.

Messrs Editors:—I wish to have it distinctly understood that the new comb system proposes to perpetuate a colony of bees for a thousand years, simply by proper management. Why not? If the hive is kept constantly full of young healthy bees, where is the danger of their becoming extinct? It might be said, with as much propriety, that any other race of insects or animals would cease to be, as it is to say that a colony of bees will die out—for they all live, increase, and die on the same principle. Not only so, but bees are also subject to that universal law of nature, improvement in breeding, when allowed to cross, and depreciation in size, in strength of muscle, and in power of vital organs, when forced to breed in and in.

There are no seeds of the same species that will not mix when raised in close proximity. Neither are there any races of insects or animals that will not mix with others of the same species when allowed to. Bees, too, are governed by that instinctive principle so universal in nature, self-defense, when their person or property is in jeopardy from an enemy. You will see them flying about their hives, mingling and intermingling with others in all the beauty and harmony of their nature, without a single act occurring detrimental to the character of beedom. Great deference is shown to strangers. It is under these circumstances, and in this way the queen becomes impregnated. But let a stranger cross the threshold into another domicile, and he is instantly recognized as a robber, and is dealt with accordingly. Now, all that is necessary to secure the happy result above mentioned is :

1st. Prevent the colony from becoming debilitated, and predisposed to disease—from breeding in and in—by introducing into the apiary every year a colony of bees from a distance.

2d. Prevent them from becoming dwarfed, and actually diseased from the effects of the old comb, by changing them, and giving them new comb every spring.

3d. Prevent them from becoming reduced in numbers, so as to freeze, starve, or be robbed—from over-swarming, by giving them ample room for active operation.

5th. Give them proper food. I am aware that the casual observer will suppose that honey is all that is necessary ; but the facts are, they will do much better if they can have a change of food that is adapted to their natures.

Vegetable oil, such as flax seed, sun flower seed and other seeds of an oily nature, when mixed with water, so as to form a glutinous substance, serves to supply this want in a very agreeable manner. (I am happy to see this kind of food for bees mentioned by other authors.) Bees require water in hot weather as much as any other animal, and this mixture of flax seed and water, serves a double purpose—drink and oil. Nature has supplied them in some sections with this oily food, where the pine, the balsam and the fir trees abound. But where those trees do not grow, it should be furnished by man. Whether they use this merely as an article of food for present use or not, or store it in the honey cell for future consumption, I am not able to say ; but it seems to strengthen and enliven them, and an extra amount of honey is the result.

The great disideratum connected with this question is profit. Now, to show that the new comb system is not only as profitable, but is in fact fifty per cent. more profitable than the old comb system, will compare notes. Suppose, in wintering twenty stocks of bees, four die, and the experience of hundreds warrants this supposition. Those four stocks of bees, under my system of management, would be worth twenty dollars, and would throw out one colony each, worth in all twenty dollars. Then, in changing the four stocks into empty hives, I will take forty pounds of fine white honey from each, worth forty dollars. I will take twenty-five pounds of surplus honey from each of the eight colonies, worth fifty dollars. This makes, in all, one hundred and thirty dollars profit. This statement is within bounds and will bear thorough investigation. The working of the two systems may be figured up in any way possible, and the result will be a considerable sum in favor of the "new comb" system. But, says one, "why will not the old manner of driving bees, and transferring the brood comb into the hive, by means of thread or cords, do just as well?" The reasons are numerous.

1st. Many of the brood bees are lost.

2d. All the young bees are lost, and the old bees will cluster in another part of the hive, and commence making comb there, and only use the old comb when obliged to for want of room. Consequently the young bees are left to the care of a few brood bees, who have been nearly frightened to death by the thumping on the hive. These last may be seen buzzing about, wonderfully irritated, trying to do something in defense of their young. Thus the brood comb is suffered to get so cold that the few brood bees can never get up the temperature sufficiently to hatch a young bee, or uncap a cell.

3d. The queen is deceived, and loses about three weeks of her time in working about the old comb instead of the new, and at a time when she is most busy in depositing her eggs.

4th. The final result is the death of the whole colony the first season. I do not speak at random on this subject. Seven stocks of bees have died here the past winter to my knowledge. I have observed them closely, and know that the workers will avoid the old comb as long as possible. S. W. Smith of this place, became satisfied on this point, by observing the course pursued by his bees, and relieved them of a pest by taking from the hive the old brood comb that had been suspended by a thread for several weeks. But I believe this method of driving bees is only resorted to in extreme cases, and is not advocated as any part of a system for practical purposes.

—J. D. SMITH, in *Country Gentleman*.

CURE FOR SELF-SUCKING COWS.—A Steuben Co. correspondent of the *Genesee Farmer*, says that he cured a three year old heifer of sucking herself by smearing the teats, night and morning, with soft grease, and then dusting them thoroughly with pulverized cayenne pepper.

WINTER IRRIGATION.

IN our November number of the present volume, we introduced to our readers the subject of winter irrigation, recommending its adoption, as far as practicable, as a means of securing a vegetable growth, attainable by no other process. We acknowledged our indebtedness, at the time, for the principles advanced and effects to be secured by its adoption, to the proper source; and, though not a few in their eagerness to decry irrigation as "worse than useless," met the subject with their only argument—an attempt at ridicule—they now, in the short space of two months, are inclining to the opinion that there may possibly be something more in irrigation, after all than had ever been "dreamt of in their philosophy."

We now find the subject of winter irrigation engaging the attention of many, and not a few are willing to be known amongst those the first to introduce this important feature of a highly successful California agriculture. That proper credit may inure to the person the first to suggest its importance, and put it into practice, we copy from a then current publication of the day, an article from the pen of J. M. Horner, Esq., Mission San Jose, Sept. 26th, 1856. If any of the present advocates of the practice can go back of this record, we shall be ready cheerfully to award them the full meed of praise due for so valuable a suggestion and discovery.

EX MISSION DE SAN JOSE, Sept. 26th, 1856.

Sir:—I have worked out some experiments the present season upon Winter Irrigation.* The results have been so satisfactory, and its working so consistent with nature and reason, that I am almost ashamed to acknowledge its never entering my head before. Believing the subject to be of great importance, and that some of your readers may be as unthinking as myself, and knowing also that some of them reside in dry countries, I look upon it as a duty I owe them, to make known my experience, together with some arguments which may be urged upon the subject.

You are aware that many in this region predicted a large quantity of rain last winter. I was faithless; believing that there was a probability of their being mistaken. And, knowing that most of my land would not produce a paying crop without more water than fell the previous winter, also, that we were more liable to suffer in California from a scanty supply of water, than from a superabundance, I concluded to irrigate; and commenced in December, 1855, to irrigate lands I wished to crop in 1856. I thoroughly wet some eighty acres. The wheat on the lands thus wet was forty inches average high, containing seventy-two grains to the head, plump and good. The unirrigated was twenty-five inches average high, and containing twenty-four shrunken grains to the head. The same quantity of seed and the same amount of labor, with the exception of the irrigation, which cost twenty-five cents per acre, had been expended on one as the other. The vegetable land was cropped in 1855, some portions of which entirely failed, other portions were destroyed by a worm;

* Is Irrigation before the crops are in the ground.

the whole was decidedly a poor crop. This year the crop is good, and the worms have not injured it—while the unirrigated, adjoining lands, are quite overrun by them—and had this not been irrigated, the crop would scarcely have been worth gathering.

The long dry summers of California, extract or absorb all the moisture contained in uncultivated lands to the depth at least of ten feet. The earth is a reservoir which nature fills and empties, at least once a year, in a perfect or imperfect manner. If imperfectly filled by nature, man should make up the deficiency, as far as he wishes to cultivate. His garden and orchard should be particularly attended to. Ten feet of dry earth will swallow up one-third of its bulk of water; hence if a man be possessed of ten acres of land, he has at the end of the dry season, a reservoir ten acres in extent and three and a third feet deep, upon which it will be impossible to cultivate any crop, until the reservoir is at least partially filled with water. If imperfectly filled, your crops will be more or less imperfect. If perfectly filled, you can raise a better crop, with less labor, than you could by expending thousands of dollars to construct a reservoir of sufficient capacity to contain the amount of water desired, and apply it as your judgment dictated after the crop was planted. And for the reason that the first is applied to the roots of the plants upon perfectly natural principles, they receiving nourishment regularly and constantly, causing a perfect, firm, healthy growth and maturity; while the latter is altogether artificial and irregular in its application, frequently stunting—which unavoidably happens where water is scarce—and then stimulates an unnatural growth and maturity, causing premature decay, as frequently happens with potatoes, onions, cabbage, etc.

Some of the benefits arising from winter irrigation, may thus be summed up:

1st. You are sure of getting your lands wet, rain or no rain.

2d. You can water your lands before planting with one-fourth the labor that you would have to spend in watering after planting.

3d. The water will remain long enough in the soil to dissolve the gasses, converting them into food for the plants, and drive worms and bugs to the surface, where they will be destroyed by the birds and fowls, also causing the larva and eggs of those insects to perish, thus comparatively freeing your soils from those troublesome creatures, and allowing you to put your lands in perfect order, in which they will remain until the crop matures.

It is the habit of too many, so soon as their crop is taken off, to raise their gates, stop their windmills and pumps, take away their dams, and otherwise labor to prevent their lands from getting wet; allowing all the water, however rich it may be, to pass by unappropriated, and their lands suffer for food; then ungratefully ask God to send rains and fruitful seasons, and remove the barrenness of the soil. Some are living near wet weather streams, that contain water six months of the year and then become dry; such should be like the miner, make use of it while it is to be had, and fill *nature's reservoir*, so that your trees, shrubs, plants and crops, may flourish during the approaching dry weather, when, if this course was not pursued, they would become withered, stunted and, perhaps, killed, before it would be in your power to afford them any relief.

Some will run out during a shower, to prevent a small stream that may have concentrated in a path or road, from entering their garden, or grounds, that may be so parched, and the vegetation that grows thereon so starved, that it was an eye-sore to its owner, instead of a pleasure. Such should pause, and consider the amount of vegetable food contained in water collected from the surface of the ground; also, that all sweet water, however pure, contains the same, though in a less degree, and imparts it to the soil it passes through. For one to know that his lands are wet fifteen inches deep at the time of planting, calculating to keep it so wet while the crop is growing, and then expect to reap an abundant harvest, is unreasonable; for all cultivators know, that most kinds of vegetation root much deeper, *if they can*. Grass roots have been traced in our neighboring wells twenty feet in depth. Neither ought it to be sufficient for one to know his orchard lands are wet thirty inches in depth at the close of the rainy season, nor that he can give the trees a slight wetting during the growing season. Nothing short of a thorough soaking, once in twelve months, and keeping the land in good tilth, is sufficient; and that ought to be done early in spring, in the winter, or late in the fall, at which time nature will do it if she do it at all.

I do not wish to be understood in this communication as discarding summer irrigation; but leave that to be argued by abler hands.

Respectfully,

JOHN M. HORNER.

LIME AND SALT FOR WHEAT.

WE make the following extracts from the discussions at the annual meeting of the Cheadle Farmers' Club, Staffordshire, England: Mr. Cargey said he had been in the habit of dressing land that was to be sown with wheat in autumn, with a manure made of a ton of lime to a half a ton of salt, well mixed together some weeks before it was used. Lord Harrowby had sent him the recipe down from London, and it had been applied to summer fallow for a long period with invariable success. Whenever he was afraid of a crop of wheat going down, he always applied a dressing of lime and salt, and the same dressing had always secured a good crop of clover. Generally plowed the land and then applied the manure to the surface. The lime and salt should be mixed some time before they are used, for the more completely they were amalgamated the better. The wheat was sown broadcast in autumn, and produced, according to the Staffordshire measure, sixteen bags per acre, and there was not one bit of it that was lodged, nor did the lime and salt make the land stiff, as some persons had predicted. He had never dissolved the salt but once. They generally laid a load of lime down and then shoveled the salt upon it and turned it over. If the weather was dry they put water upon it; but if not they let the rain fall upon it, and turned it over three or four times. He did not know that any chemical change was thereby produced, but the lime and salt were well amalgamated. He had found this plan invariably a preventive of the great

plague of falling wheat. When he first went to Sandon he was troubled a great deal with falling wheat, but now he never has any.

Mr. Knight had applied lime and salt on his light land, and found them to answer. The Vice-Chairman said he had done the same on his farm, and had found it succeeded admirably. He had also found that it saved the clover from the attacks of the slug. In wheat, it strengthened the straw, and thus prevented it from going down. If to one part of the field the lime and salt were applied and not to the other, it would be found that the straw, in that part of the field to which they had been applied, would be of a brighter and better color than that which grew where they had not been applied. He had applied them in the same proportion as Mr. Cargey.

Mr Cargey said he had recommended the application to many of his neighbors, but they were afraid to use the same quantity of salt as he had done, so that they had not tried the experiment in its integrity. He had seen wheat mildew both on land to which the lime and salt had been applied, and on land to which it had not been applied. In the latter case the wheat had suffered permanently, but in the former it had ripened off as bright as possible. Many of his neighbors had used four or five hundred weight of salt, but he had never known the proportion he had named make the land stiffer.—*Country Gentleman*.



SPONGIOLES OR SPONGELETS.

Editor Culturist:—I have noticed that writers for the *Culturist* and other agricultural journals, are in the habit of using the words *spongioles* and *spongelets*. Now, sir, I suppose they have something to do, or have some connection with roots; but will you tell me how they differ from the small fibrous roots of a tree or plant, and whether they have any office to perform apart from that which pertains to fibrous roots? What about the success of the sorghum, or Chinese sugar cane in the Atlantic states the past season?

B.

We let others use the words *spongioles* and *spongelets* as applicable to the small fibrous roots of trees or plants, whilst we prefer to call them roots. We consider a limb of a tree to be a limb to its utmost extremity, and the same of roots; they are but roots to their extreme ends. In relation to the success of the sorghum the past season, in the Atlantic states, it is hardly time yet to know what the result has been. The *Prairie Farmer*, of Chicago, Ill. of date Nov. 10th, says:

“From every quarter we have most satisfactory reports of the sweet experiments of the current year. There is being a great deal more cane manufactured this year, in the West, than appears on the surface of things. We have noticed this plant has been classed in the lucubrations of some of our wise cotemporaries among “other humbugs.” But we fear they have spoken too soon; that the quiet which has prevailed relative to this crop and its value has been that of investigation. Already we

hear notes of gratulation. We hope and believe they will prove significant of the general success and established value of this plant as a crop in the West."

The *Iowa Farmer* says: "It will be seen by the census and statistical table, that the above has become an important item in our list of productions. Our friend Beckman showed us some from the farm of Mr. Beckman, of Dallas county, which is certainly very little inferior to strained honey. We learn that Mr. B. made some five hundred gallons, and that there are others who have made about the same amount. A large number of our farmers have made from fifty to one hundred gallons each. The article is selling in this market at fifty cents per gallon. Our farmers have done well in testing the value of the sorghum plant. Too much praise cannot be accorded to them; for with wet weather last year, and early frosts this season, much of the cane has been injured. They have, however, persevered, and the result is that one cash item of our imports bids fair to be extinguished.

To those who have not visited the country until quite lately, it has been a matter of some surprise to find this plant so generally cultivated as it has been this season. On almost every farm in this neighborhood can be found a 'patch,' varying from one-half to two acres in extent, and at the time we write, the music of the rollers can be heard in all directions. But few patches exceed an acre in size—some containing exactly that quantity, measured purposely for experiments as to its yield, profit, etc. As the early frost this season, nipped a portion of that planted on the low bottom lands, the yield will vary from fifty to two hundred gallons per acre. In one case, near Rising Sun, we notice a yield of one hundred gallons from half an acre; but the sirup evidently needed more boiling down. All the sirup we have so far seen, looks well—is pleasant to the taste, and healthful, though some, we think, is too thin to keep well. This season will no doubt fully prove to the minds of Iowa farmers, the usefulness and value of the plant. No efforts should be spared in arriving at the best and most economical manner of manufacturing it. Sorghum planters, *let us hear from you all* as soon as results are actually obtained.

[California possesses probably the finest climate in the world for the successful culture of the sorghum; the season being of sufficient length to perfect its ripening, whilst the heat and dryness of the atmosphere are exceedingly favorable to the fullest development of the saccharine principle. We believe if more attention was given to its culture, than yet has been by the farmers of our state possessing suitable soils, we would not now hear so much bitter complaint of the unremunerative value of the husbandman's crops. ED. CUL.]

A NEW ENGLISH STRAWBERRY.—The British Pomological Society has awarded a premium to a new variety of seedling strawberry, named the Oscar. It is designated as having very large fruit, ovate, angular and frequently cristate; seed large and deeply imbedded; color very dark, becoming a deep mulberry when fully matured. The flesh is very firm, solid and juicy.

ART, SCIENCE AND INVENTIONS.

IMPROVEMENT IN TELEGRAPHING.—The *New York Times* of November 15th, contains the following notice of an improvement in telegraphing, the invention of Dr. L. Bradley, of California. Before the departure of Dr. Bradley for the East, we had the pleasure of witnessing the operation of his new invention, in the rough, and was satisfied that it was all he claimed for it. We are pleased to see that success has attended the perfection of his apparatus with moveable type, by which the transmission of intelligence by telegraph is immensely facilitated.

The *Times* says: "We have had the satisfaction of examining, at the Tammany hotel, an exceedingly ingenious apparatus, designed by Dr. Bradley, for the greatest improvement in telegraph recording. So fully does Mr. Raymond, of the *Times*, for himself, explain the impressions left upon us by the system invented by Dr. Bradley, that we can best express ourselves and serve the inventor by adopting the description and language of the *Times* :

'We had an opportunity of examining, yesterday, an invention which can scarcely fail to prove of great importance in transmitting messages by telegraph. At present, as every one is aware, a message can only be sent as rapidly as one operator can spell the words and record them, letter by letter, in the characters used. If the rate of transmission is to be increased, it must be by multiplying the number of wires, of instruments and of operators. One can only transmit messages as rapidly as one person can write. The invention to which we refer consists in applying the operation of printing to the process of transmission. The message is first put in type—the letters being substantially the same as those now used. These types are placed in very simple metal cases—each being about a foot in length. These cases are then placed upon the instrument in such a way that, on being carried forward by a revolving band, the projecting points of the type strike a metallic plate and complete the electrical circuit, precisely as the same result is effected in the ordinary method, by the touch of the operator's finger, and the letters are recorded with corresponding rapidity at the other end. The machine makes very nearly the same change in telegraphing which the invention of printing made in the multiplication of manuscripts. At present a message of ten thousand words over a given line, can only be transmitted as fast as one person can record the successive letters. By the use of this instrument a hundred persons can first put it in type, and then the whole can be transmitted in less than an hour. It thus multiplies the power of the telegraph immensely, and this of itself will tend very greatly to increase the amount of business which will be transacted through its agency. The process of setting the type is very simple and easily learned, and requires much less skill than the ordinary kind of type-setting. The invention seems to us one of special importance, and calculated to effect a complete revolution in the business of telegraphing.'

The *Life Illustrated* says: "A patent has recently been issued to Dr. L. Bradley, of California, for a new telegraph apparatus, which he claims as an improvement on those used by other telegraphers. This improvement is effected by means of

setting the messages to be telegraphed, in type made for the purpose, on the face of which, instead of letters, are prints and dashes in the form of teeth, of varied width, which, acting on a circuit, transmit the communication to the receiving instrument at any other point or points along the line. The record is made in parallel lines of zig-zag form, the irregularities of which correspond with the teeth of the type used in the message, and represent the common Morse alphabet. The lines are on sheets of paper placed round a cylinder, along which a carriage bearing the electro-magnet and pen-holder is moved by means of a spiral thread on the cylinder, acting in a moveable rack on the cylinder. The action of the pen may be stopped, and the carriage left stationary, should the operator wish to read by sound or transmit alone, merely by moving back this rack. The pen is a hollow silver wire in the form of a syphon, through which the ink is drawn from a fountain fixed on the carriage. It is stated that, on the line between this city and Sandy Hook, and on lines in California, transmission at the rate of from eight to twelve thousand words per hour was attained; while the quickest system heretofore employed, had never exceeded two thousand five hundred words per hour. While transmitting at this rapid rate, Dr. Bradley's instrument is capable, by simple connections, of recording on any number of cylinders at the same time, thus obviating the necessity of manifolding for the use of the press."

SEWING MACHINE AWARDS BY THE AMERICAN INSTITUTE, NEW YORK.—The committee of the American Institute, New York, appointed at the late exhibition at Palace Garden, to examine sewing machines, have made a long, elaborate, and able report, of much interest to the public. Although the utility of this invention is established beyond all question, yet, for the various purposes of its application, ignorance exists as to the particular patent best for a specific purpose. Committees heretofore have not discriminated and classified sufficiently. This report is free from these faults. The machines are arranged according to the stitch made, and the purpose to which the machine is to be applied, in four classes, first, second, third and fourth; a classification indicating the general order of merit and importance:

Class first, includes the shuttle or lock stitch machines for family use, and for manufacturers in the same range of purpose and material. The committee has assigned this class the highest rank, on account of the "elasticity, permanence, beauty, and general desirableness of the stitching when done," and the wide range of its application. At the head of this class they place the Wheeler & Wilson machine, and awarded it the highest premium. This has been the uniform award for this machine throughout the country for several years.

Class second, includes the shuttle or lock stitch machines for heavy manufacturing purposes. At the head of this class the committee decided to place First & Frost's machines.

Class third, includes the double chain stitch machines. The Grover & Baker machine is placed at the head of this class.

Class fourth, includes the single thread tambour or chain stitch machines. The

tendency of this stitch to ravel, the committee considers an objection so serious that they refuse to recommend the machines making it for any premium.

The public is much indebted to this committee for the able discharge of their duty, in rendering clear a subject that interest has so much darkened.—*Life Illustrated*.

THE NEW FRENCH WHEELBARROW.—The new wheelbarrow, which is worked by the men employed to repair the damages occasioned by the *fetes* in the gardens of the Tuileries, is attracting much attention. The novelty of the machine consists in the two legs of the barrow being replaced by two wheels, smaller than the one in front, and which are fixed immediately under the body of the barrow. The handles are raised so as to be on a level with the hands of the workman; and thus upon a level road a slight push is all that is necessary for the transport of the heaviest load. The three wheels being almost close together, the act of turning the barrow in the smallest space becomes as easy as possible. The workman has but to lean upon one of the handles, and the front wheel is lifted from the ground, leaving the barrow free to be maneuvered like a common handcart.

A Frenchman has invented what is called a barotrope, a sort of human locomotive, by which a man sits on wheels and walks himself along. It is evident that each step will carry a man several yards on an instrument of this kind, and a speed of 2.40 might be obtained without any great exertion. Two men with it made five miles in thirty-five minutes on the Boulevard Bazar of Paris, at noon, when the street was most crowded. At another time the same men made thirteen miles in ninety-six minutes; the exercises being so easy that they offered to keep it up alternate hours, day after day, and thought they could without difficulty average fifty or sixty miles a day. A singular thing about it is, that it beats the best turn-outs on steep grades, if they present a compact or paved surface.

STRAIGHTENING A CHIMNEY.—Quite an interesting operation was successfully completed lately in Port Dundas, Scotland, for the restoration of a chimney which had settled out of the perpendicular. This was accomplished by sawing several of the mortar beds between the course on the side from which the chimney leaned, thereby allowing it to come back by its own weight, without the application of any external force. Only one draft was cut at a time, to guard against any shock which might have endangered the stability of the building, and by keeping the saws wet, a bed of mortar was prepared for the superincumbent weight to settle down upon. Twelve cuts were made in this manner on different parts of the structure, which generally set before the saws had passed through half of the circumference, particularly in those made nearest the ground, where the weight was greatest. The principal dimensions of the chimney are: Total height, four hundred and sixty-eight feet; from surface to top of cope, four hundred and fifty four feet; outside diameter at foundation, fifty feet; at surface, thirty-four feet; at cope, fourteen feet.

ROOT PRUNING.

Editor Culturist:—During the controversy that has been carried on, and somewhat warmly, between yourself and the editor of the *California Farmer*, in relation to the roots of trees and that portion of the soil they should occupy, and which seems to have resulted in this: that whilst you are the advocate of deeply preparing the soil and allowing the roots of trees, if they will, to run down to the bottom of it, *he* is in favor of surface roots and surface cultivation, a frequent allusion to "root pruning" has been made by your opponent, without so much as once enlightening his readers as to the *modus operandi* of its performance. Now, sir, if there is anything in root pruning worth knowing, or if the practice is worthy of adoption, will you please enlighten an amateur on the subject.

YUBA.

Root pruning is, in some cases, resorted to for the purpose of checking a too luxuriant growth in a tree, and by so doing, favor the formation of fruit buds the following season. That it will produce this effect is, to some extent, true; but we ought to look well to the consequences of such treatment before we too hastily adopt it. The tendency of root pruning to induce fruitfulness, is based simply upon this principle in vegetable physiology: that wherever a tree, from injury received or other cause, is about to end its career of life, or, to use a familiar phrase, feels its end approaching, nature always makes a strong and determined effort to perpetuate its kind. The same rule also, to a very great extent, holds good with the animal creation. Animals, in sickness, with progeny are almost invariably sustained till their offspring are produced alive, then rapidly decline.

The fruitfulness induced by root pruning, is then simply based upon the injury the tree has sustained in its otherwise natural vigor and health, by the process. The tree has been deprived of its accustomed nutriment by the loss of its roots, and before it shall have been deprived of all life by a repetition of the process, exerts itself to perpetuate its species as soon as it can. The time in which it is able to do this, must depend upon the season in which the injury is received and its extent.

If you would only half kill a tree while inducing its fruitfulness by this process, of course you would take off only half the roots you would, if your object was to kill it outright. That a judicious pruning, or one just exactly right to secure fruitfulness without serious injury to the vigor of the tree may be practiced in some cases may be true; but the difficulty of arriving at the right of the thing renders the practice exceedingly hazardous. Quite unlike the pruning of the limbs, it is impossible to know, in detaching a single large root, what proportion it bears to the whole—it may be one-fourth of all the tree possesses, or only an eighth or a sixteenth; and yet a single large root upon one side of a tree, may be a full half of all its really nutritional roots.

Hence arises the great difficulty of its practice. Could we see all the roots of a tree at a glance as we do its limbs, then might we better judge of the proportion it

would be well to detach. The whole system—if system it has—relies more upon theory than actual practice, and should never be attempted without a more thorough acquaintance with the proportion that the top and roots of a tree bear towards each other, than is possessed by the generality of tree-growers. With all that our cotemporary has said in its favor, we are not aware of a single orchardist in California adopting its practice.

We know of individual cases in which it has been tried, and we instance, during the past season, a single tree in the garden of E. B. Crocker, Esq., Sacramento, the effect of which was, we think, to nearly ruin the tree, and deter the proprietor from further experiment in that line at present. There is a far better mode of inducing fruitfulness in trees, than by the destruction of their roots; but, if it must be done by this method, then the proper time is in autumn; dig down and cut off till you are satisfied—for no possible rule can be given. If we were to say one-fourth of all, how can it be known unless you can see them all? We would recommend, from our own experience in orchard culture for more than twenty-five years, to let the roots of the trees remain on, and let the cutting be done to the limbs, as answering every purpose that can possibly be effected by root pruning.

The objection to root pruning in the spring or early summer is, that all large roots severed at that time, or during a vigorous flow of sap, will bleed from the root, forming gangrene at the end, which poisons the otherwise healthy flow of sap towards the trunk and limbs. There is a method sometimes adopted for increasing the vigor of old or stunted trees, that is attended with good effect; and, though it consists in part of destroying a portion of the outer roots of a tree, it is very different in its results from root pruning, being just the opposite, or inducing a vigorous growth of wood instead of fruit.

It consists in digging a trench around the tree at a distance from the trunk, depending upon the age, size and natural vigor of the tree, removing the soil and all the roots by a clean cutting spade and refilling the trench with new soil or rich compost, adapted to the nature of the tree; the new roots emitted and penetrating this highly enriched soil, soon impart a new and greatly increased vigor to the growth of the tree. And, though a cotemporary has in more than one instance confounded this practice with that of root pruning, their effects upon the tree are exactly dissimilar. This mode of reinstating the vigor of fruit trees can hardly be supposed to be required as yet in California, as but few fruit trees have attained to that age that has, to any very great extent, exhausted the soil in reach of their roots. We are aware that Downing places both processes under the same head; but our own experience has repeatedly demonstrated their effects to be wholly dissimilar. Were we desirous of promoting a renewed and vigorous growth of wood and foliage, we would adopt the trench expedient; but to induce fruitfulness at the expense of vigor, root prune, without the application of manure or compost; though our own experience leads us to question the general applicability of the process, without great caution. Trees will generally be found to suffer less from a superabundance of roots, in proportion to top, than from a deficiency. We are not, therefore, the advocate of root

pruning in a California soil, until trees shall be more inclined to produce wood, at the expense of the fruit crop, than has ever yet been manifest; as the contrary prevails almost everywhere. In no country in the world do young trees bear earlier, or more abundantly than here.

IMPORTANT MINING DECISION.

HORTICULTURE AMONG THE MINES.

THE *Tuolumne Courier* of December 17th, says: A recent decision of Judge Hardy, of the District Court of Calaveras county, the case came before the court on demurrer filed by plaintiff to the answer of defendants. The suit was brought to recover damages for a trespass by defendants, who are charged with having entered the close of plaintiff and committed waste therein. The answer admits the intrusion, but the defendants allege that they are miners, and entered the plaintiffs premises for the purpose of mining; averring that the inclosure contains mines of gold, and that the plaintiff holds the same for gardening purposes. Before defendants entered they complied with the act of the legislature, entitled "an act to protect the owners of growing crops, buildings and other improvements, in the mining districts of this state," passed April 25th, 1855. The question now presented involves the constitutionality of that act as well as all other laws which expressly or by implication, recognize the rights of miners to invade the premises of parties holding lands for agricultural or gardening purposes. We extract for our readers the important points which came up on this trial, and state the whole substance of the decision as briefly, as clearly, and as free from the technicalities of the profession as possible.

"The first question which presents itself in the consideration of this case is whether the mines of precious metals belong to the state by virtue of her sovereignty or the owners of the soil in which these mines may be found. It has been claimed by many of the profession, and the claim has been supported with much ability, that the gold mines of the country belong to the United States, and that Congress alone possesses the power to prescribe rules effecting them. This argument, however, is based on an erroneous idea as to the nature of the United States Government, and the character in which the government holds title to property. If the United States own the mines of precious metals, it is by virtue of their ownership of the soil, and depends upon the same rules which governs in the cases of private proprietorship. The government of the United States owns no property of any character, except such as has been acquired in the same manner, and by the same means, as private persons acquire property. That government is a public corporation, endowed, it is true, by grant with some of the attributes of sovereignty, but is a fact worthy of note, that in every case where a power has been granted which resembles a sovereign power, it is for the purpose of intercourse of dealings, whether of diplomacy or hostility, with foreign nations.

It has been repeatedly decided, by the courts in England, that the mines of gold

and silver within the realm, whether found on the land of private owners or of the Crown, belonged to the Crown. Many reasons have been urged in support of this claim of the sovereign, but few of which are applicable to a Republican Government. The custom in England of condemning mines was confined to wastrel lands, and in the case cited of *Rogers vs. Brenton*, the court expressly held that, if by enclosure "the owner of the land may seem to have devoted the land to other important purposes inconsistent with mining operations, such as agriculture or building, the miner cannot enter it." And the observance of that rule will not close up the mines of California. The existence and maintenance of agricultural and horticultural interests together, with the mining interests, will rather tend to the advancement and prosperity of all. Nor is there any danger complained of by some, that this course will place the mines in the hands of private speculators. When it is recollected that the land—to prevent the miner's entry must absolutely be devoted to other important purposes—it will be seen that this will never be unless the owner of the soil *bona fide* considers it more valuable for other purposes than mining, as he would otherwise invest his capital in the growing of fruit trees, raising crops or building houses; nor are buildings, gardens, orchards or barley fields likely to be so extensive as to interfere with, much less cripple, the mining interests of the state.

Plaintiff alleges that he is the owner, in actual possession, and has fruit trees growing on two acres of ground. The answer admits that he is the owner of one-half of the piece of ground described. The act of 1842 is in derogation of the common law, and must be extended by implication. The case of *McClintock vs. Brydon*, 5 Cal. 97, and others cited by the defendant's counsel, are all cases arising under that statute, and in those decisions the view expressed by the Supreme Court: "That the license should not be extended to cases not arising under the act." If, then, this is not a case arising under the act, the right of the defendants to enter must depend upon some other statute or rule of law; and I know of none which would authorize it. In fact, the existence of such an authority would be a monstrosity; a party in the quiet and undisputed actual occupancy of a garden spot on which he is rearing fruit trees, vines and other valuable products, to be despoiled of his possession and the valuable trees and vines he may have growing simply because the trespasser comes in the attitude of a miner, would be a discrimination between the branches of industry which no court should ever make, unless in obedience to a positive law, constitutionally enacted by the law-making power. Under our constitution, every man is guaranteed the right to acquire, possess and protect his property, and the pursuit of safety and happiness, and he shall not be deprived of his property without due process of law. The plaintiff's possession of his garden is property; his trees and his vines are his property, and no man can lawfully despoil him of them. His case is different from the constructive possession, which the act of 1852 gives; in that case his possession hinges and is dependent upon the right of the miner. In this case the plaintiff does not invoke the aid of the statute, either to extend or confer his possession. He has acquired his property according to the ordinary mode, and claims for it the protection of the law. From the foregoing views it

will be seen that the demurrer must be sustained; and as the question is of the last importance, I will concisely state the points decided.

1st. That the mines of precious metals of this state are the property of the owner of the soil, whether the owner be the state, the United States, or an individual.

2d. That the Legislature of the state, by virtue of the states sovereignty, may authorize any person to invade the wastrel lands of others, and dig for gold, rendering compensation, to be ascertained by jury, to the owner. By waste lands I mean any lands not absolutely devoted to other useful and important purposes.

3d. That the Legislature can, by virtue of the state's eminent domain, authorize the entry upon any lands belonging to the United States, on the terms and by the same rights that it may be done upon the lands of other private proprietors.

4th. That the Legislature has not yet provided by law for the condemnation of private property for mining purposes, and for the ascertainment of value and payment of compensation.

5th. That the acts of 1852 and 1855 concerning possessory action, and for the protection of owners of crops, etc., in the mining districts, do not authorize the invasion of an actual occupancy not held under the law of 1852. And,

6th. If the act of 1855 does confer such right, that it violates the constitution of the state in depriving a citizen of his property without due process of law or just compensation. The clerk will enter judgment sustaining the demurrer, and as I cannot see how the answer can be so amended as to make it a defense to the action, judgment will be entered for the plaintiff for costs of suit and for perpetual injunction restraining defendants. There agent, servants, employes and successors, from further trespassing upon the enclosure of plaintiff, by digging, mining, or otherwise, within the enclosure.

ABOUT TULE LANDS.

Editor Culturist:—You request me to write relative to the reclamation and cultivation of tule lands. This is knowledge that is very much sought after, and by no one more than myself, for I can find but few that have done as yet any cultivation in the tules. All tule lands are, at certain seasons, overflowed lands; caused either by the flow of the tides, the rains of the valleys or the melting of the snows of the mountains. On examining tule land, it is found covered with patches of tall, rank tules in the lowest parts; then tule and grass where it is a little higher; and then, a grade higher it is all grass; the highest grade producing grass, peavine, clover, watermint and a variety of other plants. These four grades will enable any one to class the different varieties of tule lands.

The tussock [or bog. ED.] is a large collection or stool of grass blades, so entwined and netted together as to make it nearly as firm as timber. The cause of the tussock is doubtless an effort of nature, causing the blades of grass to combine to raise them above their present wet situation, enabling them to grow, flourish and bloom where they would otherwise perish from dampness. There can be a very

beautiful moral drawn from the tussock, for it teaches us to improve our own situations—a very salutary lesson to indolent farmers. On tule lands there is generally a strip of timber along the water courses, if such there be, and immediately back of this strip of timber the tussock is found.

They are in hight from six inches to three feet, and in thickness from nine inches to one foot and a half, and generally occupying one-half the land they stand upon; and except the lesson they teach, and their formation as an object of curiosity to the naturalist, they are a very great nuisance, for stock of any kind cannot walk upon them, and it is soft and bad walking between them. The tussock, when cut off with the ax or tule knife, is very useful in damming or filling up water courses, where the action of the water would wash the soil or anything less compact.

The timber on most of these tule lands is mostly willow and alder, but where it is seldom overflowed you will find oak and sycamore. Among the tule timber is a variety of sweet flowering shrubs, known to be excellent as furnishing food for bees. On the west bank of the Sacramento, and all streams where the trade winds prevail, there is the least timber; this is owing to the tules being fired, and the fire driven by the west winds into the timber, consuming it.

The animals that take up their abode in the tules are the elk, beaver, otter, mink and raccoon; there is also an animal in size between the mouse and rat, with very destructive propensities in barking fruit trees, eating potatoes and other roots; this animal is the only horticultural pest we have to deal with. For their destruction, I have a number of cats that feed upon them, and without much trouble keep them well thinned out. Chickens and other poultry are safe at night only in coops from the mink and raccoon; the noble dog, however, affords additional protection.

I had almost forgotten to mention that the tules are teeming with a species of snake called the chicken or garter snake; it is striped with yellow and a dark brown, altogether beautiful and entirely harmless. It spends the greater part of its time in the water catching minnows, frogs and flies. I have often met it in the middle of the Sacramento river in its broadest places, and in the roughest weather, crossing to and fro. The length of the longest, about thirty inches.

The tides of the Sacramento river are an object of great interest to those who are settled on the tules. Fifteen miles above Suisun bay, or thereabouts, United States surveyors have given the rise and fall of the tides at four and a half feet; now the truth is, it sometimes falls six feet, at other times not more than three feet; it is very irregular and caused by the winds in connection with the moon. A strong north wind driving down the river into Suisun bay, whence it has a powerful sweep, will not only quickly empty a large quantity of water out of the river into the bay above named, but will keep the tide in check for a considerable time; this is one great cause for our lowest tides and their irregularity. The highest tides are also as easily accounted for.

To a traveler on the steamer, the tule lands look, to say the least, forbidding; they look to him entirely too low, and he would be perfectly correct in his observation if he were any where else than in California; but here it is entirely different, for the

Creator has fitted means to ends. On the great bottoms of the Mississippi, where an immense quantity of water is absorbed from rain and flood, the planter relies upon remunerative crops, even with all the drawbacks incident to his low situation, such as billious fevers, stock drowned and crops swept away; and yet it takes but a good start, and a few years finds him a prince in the pocket, rich and independent.

How stands the matter in California? Here our rains are much less abundant and inadequate to supply fully the uplands. The consequence is, there have been hundreds of farmers ruined, and it will not stop at thousands. [Unless a system of winter irrigation be adopted.—ED.] A farmer opening a farm in the states with means to do so, and possessing a character for energy and of temperate habits, is sure to grow rich on any kind of land he settles upon. A farmer in California with the same advantages, settling upon the uplands, the chances are five to one that he is poor in four years. Look into Yolo county, it is pitiful to see the poor fellows selling their last cow to enable them to buy seed wheat; I assert that for years past they have sold their stock to enable them to buy their seed, thinking that the *next* year will bring them good crops. But alas! until the present order of nature is reversed they will see but few good or paying crops.

Now if planters on the Mississippi and its tributaries, with their abundance of rain annually, go upon and plant the very lowest parts they can find, even though amongst contagion and death, how much more incumbent upon us in California to go upon our low situations, particularly when found almost as healthy as upon the Sierra Nevada mountains, and from their humidity much more pleasant in our generally dry, summer climate. No one should be deterred from settling upon tule lands for fear of floods, for though the entire tule country of the Sacramento should be flooded, as was the case to a very great extent in the winter of '52-3, it would always subside in time to raise one good crop the same year, which is not the case in the states, nor does it leave after it a long train of sickness and disease. These are the advantages that pertain to our California low land.

In my next, I shall endeavor to describe my tule farm, mode of reclamation and management, domestic animals, my prospects, etc.

Yours, &c.,

THOMAS CUBBINS.

INNOVATIONS—TEMPERATURE OF WATER FOR PLANTS.

NOW that a judicious watering of trees and plants is a fixity, despite the efforts and opinions of those who deem "irrigation worse than useless," and who are "death on innovations," it becomes a subject of importance to discuss the nature and conditions of the water to be used. We find among the recent discussions had before the Chicago Gardeners' Society the following, which we extract from the *Prairie Farmer*:

"The regular monthly meeting of the society was held at the *Prairie Farmer* office last Thursday evening. During the past few months these meetings have been

mainly given over to business, in connection with the National and other exhibitions in which the society has participated. This order of things was reversed at the last meeting, and these winter gatherings give promise of becoming useful and interesting. It is gratifying to note the influence these meetings have had upon the gardeners of the city. They begin to think! We find some of them innovating upon old practices and customs among gardeners. The old rules long ago established, and long practiced as fundamental, are proved to have exceptions. And we note, too, how firm a hold these practices and rules have upon gardeners. Some of them believe them unexceptional. Indeed this belief often extends to almost bigotry. But facts are stubborn things, and the man who is armed with a fact can defend an innovation manfully and successfully.

THE TEMPERATURE OF WATER FOR PLANTS was a subject brought before the meeting. Mr. Ure introduced it as one of some importance to the health of plants and the success of the gardener. Believed it was too frequently the case among most gardeners, that the temperature of the water used was unknown—that the gardener little realized the effect water of too low temperature would have. There is no doubt but warm spring showers have to do with the germination of seeds. Autumnal rains produce no such sudden and gratifying effects. Water should be tempered—should be made “temperate”—should never be applied to a plant when below sixty deg. temperature—better be higher than that. He fills tin vessels with water and places them on the flue, so that they are always ready to be emptied into the vessel from which he fills his syringe, and thus modifies its temperature.

It was asked if the temperature of the water should be raised to the temperature of the atmosphere in which the plants are growing.

Mr. Chambers thought it would not be judicious in a hot-house—might answer in a green-house. Believes if the tank is filled in the evening and remains until morning exposed to the atmosphere of the house, it will be safe to apply the water.

Mr. Williams has watered cucumbers with water as hot as ninety deg. without injury to the plant, but would not recommend it for plants as a rule. He regarded sixty deg. or seventy-five deg. about the right temperature. Other gardeners conceded this to be about the right practice, yet did not deny but they applied colder water sometimes.

Mr. Knight asked if it was essential pure water should be applied to the plant, or if water containing sediment and that had long been standing was better.

It was answered that the water used in syringing plants should be pure—should contain no sediment, but not essential if applied to the pot.

Mr. Layton thought the lake water from the hydrant was an injury to the plant because it contained lime, whether applied with a syringe, or used on the soil.

Other members thought differently—that if the temperature were right, the lime in the water was no objection.

It was asked if there was any time of the year when lake water was sufficiently warm to apply to plants direct from the hydrant.

Mr. Ure had applied it so in August. He had found its temperature sufficiently

high at that time of year. Mr. Layton did not consider it safe to do it at any time."

The foregoing, which refers more particularly to the application of water to pot plants, may very reasonably suggest the propriety of understanding well the properties and condition of water used for purposes of more extended irrigation. We not unfrequently hear of injury done to plants and trees by watering, and the charge is laid to irrigation; and at once a sweeping denunciation goes forth condemning the practice as "worse than useless;" when, if the truth was known, the fault would lie, not so much in the application or use of water, as its nature, condition or temperature. It is not spring-water that injures vegetation when applied, but it is *cold* spring-water; nor is it the excess of water, half as much as it is the mode or time of application. The subject of irrigation is one of growing importance to the interests of our agriculture, and our pages are always open to its discussion.

PEACH LEAF CURL.

Editor Culturist:—The experience of the last few years admonishes us of the necessity of close examination into the cause of the curl of the peach leaf, if we wish to avoid the almost total destruction of the fruit. To elicit discussion upon this mooted subject, which would call out information in reference to the actual extent of this disease in the different localities of the state, I will briefly submit facts which I am cognizant of, viz: Native California seedling trees suffer the most from this disease. In orchards planted with the California variety, together with imported trees, the latter were generally infected—the disease spreading and increasing in intensity from year to year. Isolated orchards planted entirely with imported trees suffered the least—only of late years a few leaves on a tree curling; still, that the disease even on these is on the increase, is apparent. Some varieties of imported trees are more liable than others. Moderate growers, with rather thin, firm leaves, are less subject than the large and succulent leaved varieties. The curl prevails, without any exception, on all the white varieties; the yellow suffer less, but only one of those, the smock free, proves itself so far to be entirely exempt.

The peculiarity in the development of the disorganization impresses me with the belief, that it is caused by the sting of an insect, rather than a functional derangement consequent upon atmospherical changes, as similarly disorganized leaves and other parts of various plants are traceable to the injury sustained by insects. To catch the culprit, however, I ask your assistance Mr. Editor, and you fellow-horticulturist. So far, I have been able only to mitigate the evil by pulling off every infected leaf, and shortening in the growing shoots, by which operation the sap is husbanded and diverted to the forming of fruit; irrigation of the trees answer the same purpose. However, there is yet a resource open for the renovation of the peach by using the almond seedling for budding the peach. The hardshell almond is free from curl under all conditions, and is withal a remarkably thrifty growing

tree, a prolific bearer, of heavy solid wood, superior for firewood. To insure success, the almond seedling should be transplanted in orchard when but a few inches high; this operation is performed with the same facility and success as the transplanting a cabbage.

Yours, &c.,

J. STRENTZEL.

MORE ABOUT ARTESIAN WELLS.

Editor Culturist:—I desire, from your impartiality to contributors, to publish a few lines to rectify a voluntary error made by your correspondent "SAN JOSE," in an article in the December number of the CULTURIST, where he is trying to show that I am against artesian wells, by taking two or three lines from the letter I wrote to the *Echo du Pacifique*. This is entirely untrue, because any one who would take the trouble of reading my letter will be convinced of just the contrary.

I wish it perfectly understood that I am very far from being against artesian wells. What I am opposed to is the waste of water—the water that is lost by going into the bay. I always said, and I say it again, let every man have as many wells as he likes on his premises, but he must not be permitted to let the water run out of his property and be wasted, for by using it on his land there is none lost, because it goes back to the surface water.

I suppose "SAN JOSE" has one or more wells, and he prefers to ruin his neighbors rather than to get four or eight feet of pipe to remedy the evil. You know my opinion on this subject, because we spoke together about it, and my opinion is still the same and will not change, because I have the facts here before me, and they speak higher than anything that can be said in all the papers of the world. Any one that has any doubt about what I have said, can come here and they shall be convinced. I am certain that they are generally convinced, but have some *self-interest* to hide the truth. How can it be supposed, for an instant, that I am against artesian wells when I have scarcely any water to irrigate with? Only one-quarter of my place had some little water, and the rest had to do without it. If there are trees that have been forced by too much irrigation, most of mine have not been irrigated for these last two years. Let it be well understood at once, that I am not against artesian wells that are so useful; but strongly against the wanting of water that we need so much; at the same time I am opposed to too much water. I most generally found that one irrigation, given in proper time, was enough; we simply need a proper moisture to keep the things growing, and nearly all our brother nurserymen here, understand it that way.

But, Mr. Editor, I entriely agree with your other correspondent—"Anti Gopher." Everything he says is perfectly true; I know it by experience, having also many of these pests—gophers.

Respectfully Yours,

L. PREVOST.

THE TRUE PRINCIPLE OF CALIFORNIA FARMING.

WE have repeatedly advocated a divided risk for our farmers in their agricultural operations. Oak Knoll farm, Napa, is a capital instance of the practical working of the system of operations and arrangements we would advocate. On that farm, though grain is the staple product, the risk is divided, because embracing one of the best market orchards in the state, an extensive vineyard of choice vines, both native and foreign, and an admirably conducted dairy. The young orchards are all grafted fruits, that are known to have done the best in Napa climate, the exquisite flavor, remarkably fine and beautiful appearance of which, have swept so many of our first premiums at our state and county fairs.

The dairy stock is unsurpassed, embracing some of the finest Ayrshire milkers, cross and full bloods, on the pacific coast. The system of rotation, introduced in the culture of the grain crop, is a direct illustration of a division of risk in the production of the cereals. Wheat, barley and oats, occupying annually about an equal breadth, so that, let the season or the market be as it may, the proprietor is pretty sure to hold at least one good card. The standard hands employed are mechanics acquainted with farming. The benefits of this practice are apparent everywhere—in the fences, out buildings and tools, created in times of comparative leisure. The perfect adapt- edness and stability of the buildings, made from the stone and clay of the farm, the abundance of home manufactured implements, the neatness and thoroughness of the farming, and the freedom of the land from weeds, show this to be good practice.

A system of irrigation has been adopted on the grain lands that, by a series of ditches, secures during the rainy seasons, the fullest benefits from the flooding and consequent fertilization of the lands. The straw of the farm is saved in large stacks, to which the cattle have free access during the starvation months, of those who practice burning it. The stock and farm buildings are supplied with water from an aqueduct a mile and a quarter in length. Alfalfa is grown upon the hiltops, furnishing an admirable summer pasturage for the dairy stock.

The mansion of the proprietor is an elegant structure, in the midst of beautiful pines and other conifers, and approached through avenues of the finest deciduous and ornamental trees grown in our climate. In the whole arrangement there is a permanence, an elegance, a completeness in the whole detail highly creditable to the head that plans and the hand that conducts, and which would be deserving of high praise even in a much older farming community.



CRANBERRY STATISTICS.—Carefully prepared statistics of the crop of cranberries grown this year at Harwich, Dennis and Brewster, on Cape Cod, show that one thousand nine hundred and eighty seven barrels of them were gathered, valued at \$23,622.

Editor's Repository.

THE EDITOR TO HIS PATRONS.—The CALIFORNIA CULTURIST, now one of the established institutions of the land, is sustained by the voluntary payment of five dollars annually from each of nearly two thousand subscribers, and a liberal advertising patronage; for which we endeavor to give an equivalent in monthly numbers of forty-eight pages each, of matter interesting and useful to those who read it.

We have no old stereotype promise of "further improvement in our journal" to make; but shall always endeavor to do the best we can. We therefore hope for a continuance of that patronage which has placed our journal in the proud position it now occupies. Our cotemporary of the *Farmer* in his issue of Dec. 16th, asks the prayers of his friends in support of his journal. An excellent idea; though at first we thought it sounded a little odd, coming from the source it does, and somewhat ominous.

Give us five dollars a year, gentlemen, as promptly as you have thus far, and with the smiles of heaven, health, and God's blessing upon our efforts, we will give you the CULTURIST, with or without your prayers, if the gentlemen having charge of the postal arrangements of the country, will do their duty as efficiently as they have heretofore, and the California Steam Navigation Company's boats continue to carry us free. With a pleasing prospect before us, with no bills to present, nor a dun with which to greet you, we wish you, one and all, a joyous, happy New Year.

OUR FRONTISPIECE Is a lithograph by Kuchel, of this city, of the Osage orange, the fruit of that well known shrub so extensively used at the south and west of the Atlantic states for hedging. The fruit presents a beautiful appearance; in color a pea green, size as indicated by our lithograph, but useless for any other purpose than its seeds for propagation. The specimen from which we copy was presented us by Capt. J. Aram, of San Jose, and exhibited at the late fair in that city. The plant is among the best for producing a strong compact hedge; for, when properly grown, is proof against bulls and boys, making an admirable surrounding for fruit grounds, not only for the protection it affords from animal intruders, but from the too powerful blasts of winds. If we recollect aright, Dr. Bascom, of San Jose, has one of the finest specimens of hedge from this plant or tree, to be found in California, and highly deserving of notice.

A CONTRAST.—We can hardly take up an eastern agricultural journal from among the many of our exchanges, but we find a considerable portion of their contents devoted to good advice and sound counsel in regard to a proper preparation for winter. They usually appear with headings something after the fashion of the following: "Winter protection of vines, trees and plants—protecting roses for the winter—wintering bees—winter protection of stock—a good material for banking houses—how to keep cabbages in winter," with an almost endless variety but little dissim-

ilar to the foregoing, and all going to point out the wide contrast between the winter of the eastern, northern and middle states, and that of California, in all save its more elevated districts.

At the east, vegetation is dormant in the open air, for nearly six months, requiring one-half of the year to grow the grains and other agricultural products, to be consumed by the other half. Here, our cattle and sheep graze the entire season, with little or no provision for their winter food over that of summer. Fresh strawberries and green peas, grown in the open air, are found in our markets during every month of the year. As a Christmas, horticultural present, we were presented by an amateur culturist near this city, with strawberries, grapes, green corn, green peas, cucumbers, two pears, three apples and a watermelon, all pulled from the tree or vine the day previous, that had been produced in the open air without the slightest protection from frost, and wholly uninjured thereby.

ADVERTISING.—Our eighteen pages of advertising, and our eighteen hundred subscribers who read them monthly, have suddenly startled our cotemporary of the *Farmer* to a realization of facts, and in tones the most dolorous he says: "It is generally admitted that our *Nurserymen* and *Seedsmen* know pretty well where it is best for them to advertise their business. We are satisfied they do know what journal can do them the most good."

This frank admission of our cotemporary, in regard to the *CULTURIST* as an advertising medium we appreciate, and as an offset for the courtesy shown us, would gladly reciprocate were it in our power. The editor of the *Farmer* "believes" he can show the "largest Nursery business advertisement that has ever been offered in the columns of a newspaper on this coast." As he is very careful to say "*newspaper*," he is doubtless on the safe side. At present, we don't "*Colonel*" any "*newspaper*," but we do try to edit an agricultural magazine, having at the age of a year and a half more than double the number of paying subscribers the *Farmer* can boast of, after a six years' effort. The sneer of the *Farmer's*, "*Colonel*," about our advertising patronage in its issue of Dec. 2d, has brought us nearly enough to fill one such newspaper as the *Farmer*, and which we publish in addition to our regular forty-eight pages of reading matter.

NATIVE WINES.—In the December number of the State Agricultural Society's Journal, we find the following interesting note upon the manufacture of wines in Sacramento. "A. P. Smith, of the "Pomological Garden," has presented to this office, within the last few days, one dozen bottles of wine made by him at his place, some from the vintage of 1858, and others of 1859. Each bottle made from a different and distinct variety of grapes, all manufactured by the same process. His object is, by a series of well attested experiments, to learn the most desirable varieties for wine-making in this climate; and, at the same time, what varieties, and in what proportions, when combined will make the best wines. We think Mr. S. is on the right track. The samples presented us having been tested by the best judges are pronounced unusually pure and fine for juice so fresh from the press. The wine from the Black Hamburg and Royal Muscadine are very superior—the latter particularly so. We have never tasted juice so young which was its superior.

Mr. S. has manufactured some two thousand five hundred gallons this year, and is largely engaged in growing vines of the most choice varieties for his own planting, which he designs to continue as his experience shall dictate. We wish him the most complete and abundant success, in this his work of experimenting for the benefit of the state.

STATE AGRICULTURAL SOCIETY'S ANNUAL MEETING.—At a meeting of the board of managers, held December third, it was resolved to hold the annual meeting of the society at Agricultural Hall, in the city of Sacramento, on Wednesday the 18th day of January, 1860, to commence at 12 o'clock M. of said day. At this meeting the constitution provides that the officers for the ensuing year be elected, and the place for holding the next fair shall be fixed. A full attendance of all the members is solicited. Business of the greatest importance to the interests of the society will be trans-

cted. The office and rooms of the society have been removed and are permanently opened in the new Hall, corner of Sixth and M streets. They occupy the entire front of the building on the first floor. The Corresponding Secretary's office is in the south-west corner room, of the same size as the south-east corner; while the library and reading-room occupies the intervening space, seventeen by forty-eight feet. All of which, taken in connection with as much room as we need in the lower main Hall, places the society in as desirable quarters as could be wished. The friends of the society and the public in general are cordially invited to visit the rooms, examine the curiosities and enjoy the use of the library and reading-room, the latter of which is furnished with most of the leading papers in this state, besides many of the more prominent literary and agricultural periodicals of the older states.—*Id.*

AWARDS FOR FARMS, ORCHARDS, VINEYARDS, ETC.—The awards in the above department will be announced at the annual meeting. This arrangement obtains generally in the older states, and is no less desirable here than there—affording, as it does, an opportunity to properly mature autumnal crops and furnish data duly attested. On account of the commercial value of an earlier award to nurserymen, the board have excepted that department, and made the following awards:

FRUIT NURSERIES.

First Premium—B. S. Fox, of Santa Clara county.

Second Premium—D. T. Adams, of Santa Clara county.

ORNAMENTAL NURSERY.

First Premium—Wm. O'Donnell, of Santa Clara county. [The county of Artesian wells and irrigation. *ED. CULTURIST.*]

TIMBER NURSERY.

First Premium—S. Harbison, of Sacramento county.—*Id.*

TRANSACTIONS FOR 1858.—The transactions of the society for 1858, have been printed by the State Senate, making a volume of near four hundred pages. Twelve hundred copies for the society, and thirteen hundred for the state.

By order of the board, each member of the society for 1858, is entitled to one copy, which is now held at the rooms, corner of Sixth and M streets, Sacramento, subject to the order of those entitled to receive them.—*Id.*

FRUIT CULTURE—WINTER APPLES.—Under this head, the *Farmer and Planter*, of Columbia, S. C., says: "Our readers will find in the present number, a very sensible letter from Mr. Mock, of California—and first published in the *CALIFORNIA CULTURIST*—on Fruit Culture, Winter Apples, &c. Mr. Mock is good authority—he was one of our first pioneers in the introduction of choice fruits to the south. His nursery was in North Carolina, and for years after he began the business he was obliged, in order to get sale for his trees, to have them peddled over the country, going from house to house, and finding it a hard matter to sell them at twelve and one-half cents a piece. Many of the best orchards in North Carolina and South Carolina owe their existence to Mr. Mock's good sense and indefatigable industry.

He was one of the first to learn the importance of acclimation, and his experience is worth a good deal. Mr. Mock can look back over his former field of labors, and enjoy the satisfaction that his efforts have borne good fruit."

The year old apples, we had the pleasure of exhibiting at the different fairs the past autumn, were a few of the late keeping varieties, introduced into California by Mr. Mock, from his North Carolina nurseries, of southern seedlings.

NURSERIES OF SAN ANTONIO AND OAKLAND.—*Editor Culturist*.:—In your December number you have—inadvertently perhaps—done injustice to the nurseries of San Antonio and Oakland, by your assertion that “trees grown in Santa Clara valley, or along the east side of the bay as far as San Lorenzo, are far preferable to such as are raised in the vicinity of San Antonio or Oakland.” Now, sir, will you allow me to say that trees grown in this vicinity, are better than those grown in Santa Clara or any other locality in the state? [Certainly! say just what you please. Ed.] And the reasons why they are better are these: In the first place they are grown in a colder climate than is found elsewhere in all the low, bay or valley country; the consequence is, the wood is better matured, whilst the trees have a larger proportion of root to top, than trees grown in a warmer climate, and consequently suffer less in transplanting; and can be transplanted earlier in autumn in consequence of their earlier maturity. Are not these reasons conclusive? OAKLAND.

To some minds doubtless they would be; but as this is a subject that ought to bear investigation, we will give it a thought or two. We never positively asserted what you have charged upon us. We stated what was *our belief*, and we may be mistaken. We gave as a reason for our belief, that these localities, exposed to the cold, raw sweep of the Golden Gate winds, have a climate peculiarly local in character, and producing a vegetation alike peculiar (in its character) and illy adapted to the condition of dissimilar climates.

Now is not this tolerably sound logic? and who would have believed us, if we had reasoned just the opposite of this? and said that Oakland and San Antonio, exposed to the cold, raw sweep of the Golden Gate winds, possess a climate peculiarly local in character; therefore, nursery trees grown there, are *better adapted* to the condition of dissimilar climates. Would there be either common sense or reason in such an assertion? If we were to plant out an orchard in Oakland or Alameda, we would not go to Santa Clara for trees; and only because their climate is so entirely dissimilar. We should, as a general rule, prefer to have our trees from a locality as little differing from that where they were to be permanently grown, as possible. We may be wrong in this; but, if so, are willing to be set right; and, whilst ever ready to give room on our pages to the opinions of others, we shall as assuredly claim the right of expressing our own. We are not among those who believe in the abandonment of a principle, merely because it may chance to interfere for the moment with an individual interest.

We doubt the propriety of sending to a colder climate than our own for trees; we would not send to Oregon, therefore, even though a variety or two grown there, might prove to be good keepers with us; because we believe trees grown in a milder climate, will make the best trees for such climate. The nurseries of Canada and New England *are not* now sustained by the demand for trees to be finally grown in the middle or southern states, though their transportation would be easy. The finest flavored and best keeping apples and pears, in the Carolinas and Georgia, are the product of trees that have been grown and matured there. The utmost limit of cold in which a tree can be grown, is very far from being the best fully to develop its most perfect organization. Is it not too cold in the vicinity of Oakland or San Antonio to grow, as a regular crop, the peach or even grapes to perfection? If it is so why should nursery trees, grown there, be “*better*” than those grown at San Lorenzo, “Santa Clara or any other locality in the state,” as affirmed by our correspondent? We don’t say they are not, only it is our *belief* they are not.

AGRICULTURAL NEWSPAPERS.—The low price at which the weekly agricultural newspapers of the Atlantic states are furnished to subscribers—one dollar a year—is securing a rapidly increasing circulation and patronage in California. The firm of Warren & Carpenter, Clay street, above Montgomery, has the agency for nearly the entire of the eastern agricultural and other newspapers and magazines.

We learn that the circulation of eastern agricultural weeklies, in California and Oregon, already reaches to more than half that attained by any similar publication on this coast, and rapidly extending. We say let the light come in, we cannot have too much.

FRUIT TREES FOR NEVADA TERRITORY.—The recent discovery of extensive and valuable mines of lead, copper, silver and gold, in the country adjacent to the eastern base of the Sierra Nevada mountains, and the immense influx of miners and adventurers thereto, making the matter of a large resident population at no distant day, a certain event, very naturally suggest the expediency, safety and profit that would inevitably result from an early introduction and growth of such fruits as might be found adapted to the climate. That some varieties of fruits will succeed there in some localities, can hardly be doubted; at the same time it will be well for those who contemplate planting extensively, to bear in mind the extreme liability of much of that great system or line of inland valleys, to late spring and early autumn frosts; not only on account of their near proximity to the snowy ranges of the Sierras, but to the fact that nearly all of the best valley land there, has a positive altitude or elevation, of about five thousand feet above the sea level, or tide water in Sacramento river. We are aware that much fine fruit is grown on the western slope of the Sierras, that Coloma and Placerville and other places of similar altitudes, have produced some of the best fruits of our state; but these places have an elevation of hardly two thousand five hundred feet, or but half that which pertains to the eastern slope, valley country. All manner of fruit trees may succeed better than we anticipate, in their production of fruits; but, until something of a definite character is known, of the fruiting capacities of those elevated valleys, we shall look upon any attempt to grow the finer fruits there, upon a large scale, as an experiment, doubtful as to its results. We would like to hear from our subscribers there—Cary, Smith, Carson, Wetzler, Job, Hall and Thompson—all or any one of you, upon the subject of fruit culture in your beautiful valleys.

OUR ORCHARD INVESTMENTS:—

EDITOR CULTURIST.—I am glad to notice the interest taken by divers horticulturists in the cost, of orcharding, as evinced by their communications to some of the daily papers. If we consider the energy and enterprise manifested in this business, both in planting and propagation, it will not be surprising that the interests of nurserymen and orchardists seemingly clash. But this is only for a time; if the subject is examined, those who plant, will do so knowingly in regard to their future competition; those who propagate, will study well the varieties in excess, and increase only those which are now insufficient. It is our misfortune that high rates of interest, necessity in finance and the comparative limit of market and population, restrict the majority of people from looking beyond a five years' investment, and few are bold enough to look even that far. In that our orchardists have indeed been enterprising, and it is painfully to be regretted so few there are of our pioneers in this culture, who will reap the fruits of their own planting; how few there are who now set under their own vine. Precarious seasons, high prices of labor and the accumulating interest account on a long investment, have stripped them of their homes, before trees have fruited or plans matured. It is well, Mr. Editor, this discussion has been introduced; we want no mistakes or failures in this great California interest, nor in any other that develops our agricultural resources. Let us have the facts and figures, if we can learn a lesson from such records; let us have them, for only by comparison with the past, can we achieve success for the future. In this discussion we seem to have had the costs of orcharding from some of those engaged in the business; if they are too high, if the work has been done cheaper, can you find some farmer's account book to give us actual cost, rather than columns of prospective cost, in a matter in which experience is so valuable, and practice is so varied. My own experience is that the cost of these operations are nearly always underrated, and profits too often calculated on the yields, not of orchards, but of individual trees. Give us a fair showing of the comparative costs of vineyard and orchard culture, during the years in which such investments have to be supported; show us when we may safely reckon them to be self-supporting, and you will do good service to individuals and to

CALIFORNIA.

METEOROLOGICAL TABLE,

For Sacramento, California; being an abstract of Observations made during the month ending November 30th, 1859; Lat. 38°, 34', 41", N.; Long. 121°, 27', 44", W. Height of the lower surface of the mercury, 41 feet above the sea at San Francisco. The observations are made three times a day conformably with the hours adopted by the Smithsonian Institution. The indications of the barometer are given corrected for capillary action, and reduced to the temperature of 32° Fahrenheit, but not corrected for its height above the sea level. The rainy days are included under the head of cloudy and foggy, and are also put separately to show the number of days on which rain fell during the month. The force of the wind is estimated and registered in figures from 0 calm to 10 a hurricane.

By THOS. M. LOGAN, M. D.

NOVEMBER, 1859.	7h. A. M.	2h. P. M.	9h. P. M.	MONTH.	AVERAGE OF SEVEN YRS.
Barometer, Maxima	30.326	30.278	30.278	30.326 inches.	+ 0.015 inch.
“ Minima	29.802	29.810	29.791	27.791 “	— 0.008 “
“ Mean	30.051	30.030	30.038	30.040 “	— 0.025 “
Thermometer, Maxima	59.00	68.00	61.00	68.00 deg.	— 0.33 deg.
“ Minima	42.00	49.00	47.00	42.00 “	+ 1.80 “
“ Mean	51.13	56.90	54.13	54.05 “	+ 0.34 “
Force of Vapor, Maxima .....	.452	.529	.469	.529 inches.	+ .060 inch.
“ Minima .....	.189	.231	.272	.189 “	+ .021 “
“ Mean .....	.317	.366	.358	.347 “	+ .020 “
Relative Humidity, Maxima	94.00	89.00	94.00	94.00 per ct.	— 0.98 p. ct.
“ Minima	56.00	51.00	71.00	51.00 “	+ 15.33 “
“ Mean	83.43	78.77	84.77	82.32 “	+ 6.28 “
Number of Clear Days	1	5	6	4 days.	— 6.13 days.
Number of Cloudy and Foggy Days	29	25	24	26 “	+ 6.13 “
Number of Rainy Days .....	.....	.....	.....	16 “	+ 7.13 “
Quantity of Clouds	6.5	5.2	5.3	5.7	+ 1.2
Quantity of Rain and Fog .....	.....	.....	.....	6.485	+ 3.877 inch.
1st Days and 2d, Force of N. Wind..	9 1.7	7 1.6	6 1.0	7 1.3	1.4 — 1.3 + 0.3
“ “ N. E. Wind..	1 1.0	2 1.5	1 1.0	1 1.3	1.2 — 1.3 + 0.2
“ “ E. Wind....	1 2.0	2 1.5	3 1.7	2 1.7	— 2.3 + 0.3
“ “ S. E. Wind..	11 2.2	7 3.3	8 2.7	8 2.3	2.7 + 2 + 0.8
“ “ S. Wind....	4 3.8	2 3.0	6 2.3	4 3.0	+ 1.13 + 0.7
“ “ S. W. Wind..	0 0.0	5 3.0	1 2.0	2 1.7	+ 1.3 — 0.1
“ “ W. Wind....	0 0.0	3 2.0	2 1.0	1 2.3	1.0 + 1.3 — 0.2
“ “ N. W. Wind..	4 2.0	2 3.0	3 1.3	3 2.1	— 2.13 — 0.1

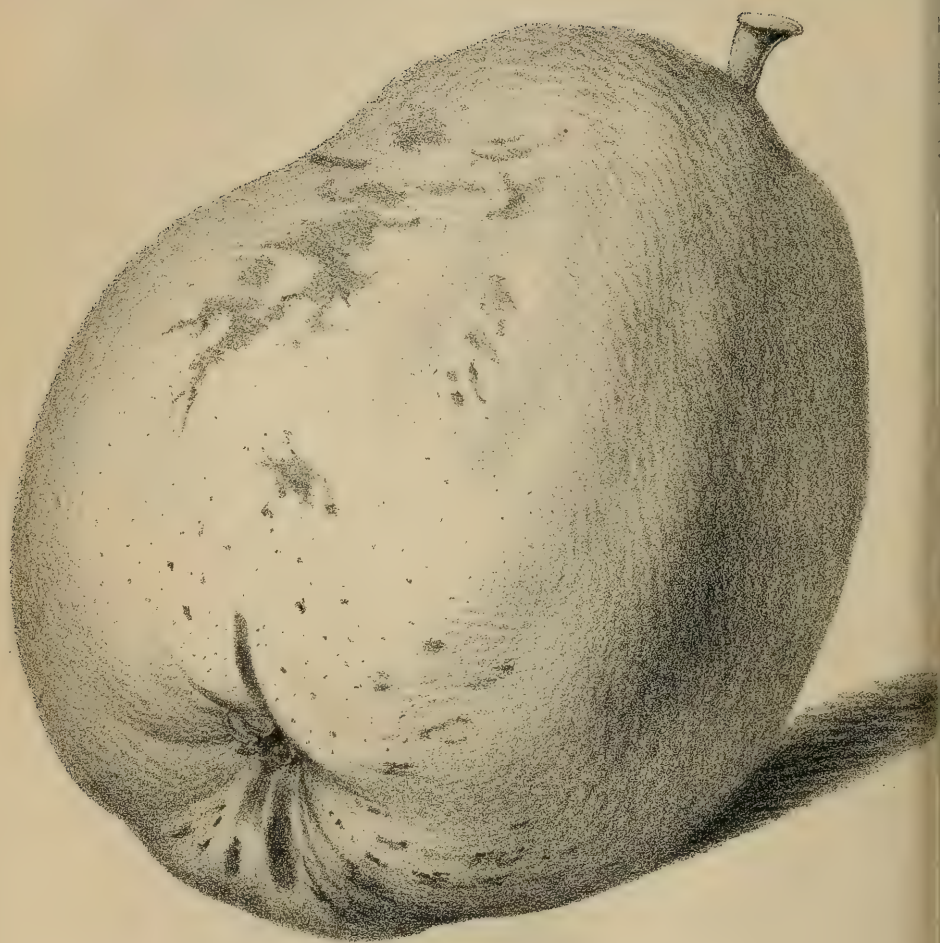
Thermometrograph.

	DEG.		DEG.
Highest Reading by day on the 1st	70.00	Mean of all Highest Readings by day	57.46
Lowest Reading by night on the 8th	37.00	Mean of all lowest readings by night	49.23
Range of Temperature during month	33.00	Mean daily range of Temperature during mo.	11.23

REMARKS.—It is our lot to chronicle several unprecedented meteorological occurrences, which render the month exceptional, and rather point to the inference that the deficit of rain, during the last three years, is likely to be made up by the present season. Never before has so great an aqueous precipitation been experienced during the month of November; nor has the Sacramento river ever been known to rise as high so early, as it has lately done. In the memorable winter of 1849–50, although the rains sat in as early as the 23d September, still it was not until the latter part of December, and beginning of January, that they became so copious as to make an impression on the river, and to cause apprehensions of the overflow, which occurred for the first time on the 10th January, 1850. This season, in consequence of the heavy fall of 3.890 inches of rain between the 6th and 11th of the month, the river rose 14 feet, and marked at the latter date, at about 10 p. m. on the city scale, 16 feet above zero. This sudden rise, which soon passed off, was occasioned chiefly by the freshet of the American river, the descent of which is more sudden and abrupt than that of the Sacramento. These early rains were ushered in by disturbances of the electrical equilibrium, seldom witnessed in California, and especially at this season of the year.

After an interval of one week, the weather again assumed, on the 17th, its rainy habit, and continued more or less unsettled to the close of the month. On the morning of the 25th, the wind, which had been blowing very high from the South East, during the previous night, freshened into a gale, and blew about 5 p. m., for a short time, with greater violence than we have ever before experienced here—not even excepting the force of the morning of the 1st January, 1855. Fortunately, the violence of the gale was soon spent, or the damage done would have been much greater: as the same gust which carried away the ventilator of the roof of the Agricultural Pavilion, removed most of the shuttles of other buildings that happened to be in its course, and thus laid their roofs open to the force of the wind and the ingress of the rain.

The plural deposition of the latter part of the month, though of longer continuance, did not, however, equal in quantitative proportion that of the first period; and consequently, the river did not rise the second time above seven feet. Nevertheless, as seen in our table, an uncommonly large amount of rain has fallen in the aggregate—far exceeding the average of former observations, and marking the month of November, 1859, as the most rainy ever known in California. What may be the portent of these early and abundant outpourings, time alone can tell. But whether or not there will be any consecutive uniformity in the coming months—*certainly*, enough water has already fallen to fully saturate the earth; and the ample opportunity thus afforded for miners and agriculturalists to avail themselves of its benefits, will doubtless result in great good to the country.



EASTER BEURRÉ

T H E

CALIFORNIA CULTURIST.

FEBRUARY, 1860.

STRAW FOR FODDER.

WE believe there is not a state in the Union in which there is a more reckless waste of the straw of the grainfield than in California. Thousands of tuns of the cleanest, brightest straw ever grown in any country, are annually consumed by fire, that might with a far better economy be consumed by the stock of the farm. The great bane of our more southern states' agriculture—one that has impoverished its millions of acres, is a system of cropping with grains, with little or no admixture of stock husbandry. A system that, whilst it abstracts from the soil the constituents of a vegetable production in a rapid degree, gives little or no return for the constant drain made upon it. The attention of southern culturists has recently been engaged upon this important feature of their agriculture, and its results bid fair to revolutionize their entire system.

The main feature upon which they ground their improvements, consists in converting their straw, haulm and refuse of all available vegetable productions into manure, by being first fed to stock and then as manure returned to the soil.

Of the value of straw, as feed for animals, we believe it is under estimated in this state; and for the purposes of substantiating our belief, and directing the attention of our grain producers to their straw, as an auxiliary source of wealth, we subjoin the following excellent article upon this subject, from the *Rural New Yorker*.

"During the discussion at the late state fair of this state, a gentleman of Erie, stated that he had found straw, cut and steamed, and mixed with a handful of meal to give it a relish, of more value in keeping stock than the same weight in Timothy hay. This idea of steamed straw being more valuable than good Timothy hay was rather startling, and we do not think one in a score of those present was prepared to indorse or willing to believe such a statement, without further proof. Mr. Mechi, however, the celebrated English farmer and experimenter, advances the same opinion and urges its trial upon the attention of farmers, declaring it to be 'a vital question for agriculture.' He considers that the present low estimate placed on straw, arises

from the fact that farmers do not understand how to feed it, and unless properly prepared it is not available as food. In all cases straw should be cut and steamed, and in this condition he thinks it is as good as the same weight in hay. In proof of this he gives the result of some experiments he has made. In feeding ten short-horn bullocks, about thirty months old, he gave a steamed mixture of two hundred and sixteen gallons of cut straw, six of rape cake, three of malt combs, and five of bran, moistened with twenty gallons of hot water per day. He also fed three hundred pounds of mangel wurtzel; the whole cost, not including the straw and labor, is about one dollar per week. The animals are in a fattening and growing condition, and advancing remuneratively. After feeding they lie down contented, free from restlessness. He further says: 'The whole question may be said to hinge upon the condition in which the food is administered. It must be moist and warm. Were I to give my bullocks the same quantity of cut straw in a dry state, they would not eat one-half of it; and, besides, they would be restless and dissatisfied. This I know from experience.'

Now, we will ascertain how far these statements of practical men are sustained by the composition of straw, as shown by analyses. The following table we take from the *Cyclopedia of Agriculture*:

AVERAGE COMPOSITION OF WHEAT STRAW.

100 parts of wheat straw contain—Nitrogenized substances, (muscle-producing substances) Air dry.....	1.85	Dried at 212° F.	2.03
Substances free from nitrogen (heat and fat producing mat- ters) soluble in potash, air dry	26.34	" "	35.06
Do., do., insoluble, air dry.....	31.22	" "	35.07
Mineral substances, air dry.....	4.59	" "	6.01
Water, air dry.....	26.00	" "	.....
	100.00		100.00

Thus it will be seen that one hundred pounds of wheat straw contain over sixty-nine pounds of muscle, heat, and fat producing matter, and twenty-six pounds of the remaining thirty are water.

Dr. Lyon Playfair, the chemist of the English Royal Agricultural Society, gives the following table of the relative value of wheat straw, hay and several other kinds of food:

COMPOSITION OF THE PRINCIPAL ARTICLES USED AS FOOD.

100 lbs. wheat straw contain 79	lbs. dry organic matter or food.	18 lbs water.	3 lbs. ashes
100 lbs. linseed cake.....75 1-2	" " " "	17 "	7 1-2 "
100 lbs. peas.....80 1-2	" " " "	16 "	3 1-2 "
100 lbs. beans.....82 1-2	" " " "	14 "	3 1-2 "
100 lbs. ordinary hay.....76 1-2	" " " "	16 "	7 1-2 "
100 lbs. barley meal.....82 1-2	" " " "	15 1-2 "	2 "
100 lbs. oatmeal.....89	" " " "	9 "	2 "
100 lbs. bran.....81	" " " "	14 "	5 "
100 lbs. oats.....79	" " " "	18 "	3 "
100 lbs. potatoes.....27	" " " "	72 "	1 "
100 lbs. red beets.....10	" " " "	89 "	1 "
100 lbs. turnips.....10	" " " "	89 "	1 "
100 lbs. Swedes.....14	" " " "	85 "	1 "
100 lbs. white carrots.....12	" " " "	87 "	1 "
100 lbs. mangel wurtzel.....10	" " " "	89 "	1 "

By this it will be seen that one hundred pounds of wheat straw contains more real food than one hundred pounds of hay, nearly as much as one hundred pounds of bran, and precisely the same as one hundred pounds of oats. We do not suppose that the experience of many of our readers will agree with this scientific estimate of the value of wheat straw, and we doubt if careful experiment would prove it so in practice. But, reducing the estimate one-half, and then one hundred pounds of straw is equal in value to fifty pounds of oats, or fifty pounds of wheat bran, for which many farmers willingly pay the cash, while they waste tons of straw in yards and stables. But who is prepared to say that this estimate will not prove correct in practice? Who has cut and steamed, or scalded straw, and fed it with a little corn or oatmeal or bran, and made even an attempt to ascertain its value? Many, we have no doubt, have felt compelled to sell a portion of their stock on account of the scarcity of food, and to put the remainder on short allowance, which all know to be a most unprofitable practice, while they had straw enough, if prepared in a manner suitable for stock to eat, to keep all in a thriving condition.

In nearly all the English estimates of the value of the wheat crop, which we have seen, the straw is reckoned at ten dollars per tun. This may be considered a high estimate, with our present notions and experience, but the gentleman of Erie county, to whom we above referred, informed us that he considered wheat straw worth that price, and that, by its use, in the last two years, he had saved in feeding over five hundred dollars. This is the experience of an American farmer. We hope our readers will not only take care of their straw this season, but institute such experiments as will enable them to form a reliable estimate of its true value for food.



IMPROVEMENT IN HOP PLANTING.—We are indebted, says the *Country Gentleman*, to some attentive friend in England, for a copy of the *London Star* of the 24th ult., containing the following interesting passage marked in its Paris correspondence :

A valuable discovery in the cultivation of hops, has just been communicated to the academy. Like most agricultural improvements, it has been the result of observation made by a laboring peasant. It consists in making the plant run in a horizontal direction instead of climbing up the pole. This is managed by means of a low trellis work of the simplest construction. The advantages of this mode of culture are numerous. In the first place, it enables the grower to investigate the plant while growing, and cleanse it from the numerous insects which injure it to so vast an extent ; then it is protected from the sun, which always destroys the upper shoots ; it obviates the great destruction of hops in stormy weather, when the wind lays low whole hop grounds from the height of poles ; and, most of all, it enables the gathering of the cones to take place without uprooting the plant, besides permitting the selection of the ripest ones at first, and preventing the great loss which arises from the necessity of tearing down the whole plant to get at the ripest blossoms.

HORTICULTURAL PRACTICES.

EDITOR CULTURIST:—That horticulturists should differ in their opinions of the utility of certain practices pertaining to their vocation, is in nowise extraordinary when we take into consideration the multiplicity of circumstances that control their action. Thus, as in tree-growing, one is situated upon a sandy loam so nearly on a level with the waters of bays and rivers, that should the roots of trees penetrate deeply, they must inevitably reach a wet, cold, inert subsoil, illy adapted to the healthy condition of the tree. On the other hand, a soil like the alluviums of our rivers—deep, rich and sufficiently dry for roots to penetrate deeply without reaching a subsoil perpetually saturated, may be the site selected for tree-growing; and again our hills, fertile beyond example, but with a subsoil dry, hard and almost impervious to moisture from either above or below—and if to moisture then nearly so to the roots of trees—may be a third condition of soil; and yet all of them under favorable circumstances adapted to the growth of orchard trees. And yet no one can deny, that whilst the tops of such trees may find in their climates but little dissimilarity, their roots may occupy soils as unlike as possible. It becomes, then, a question of two sides, as to whether the same culture is equally adapted to the different conditions.

I am led to these remarks, by observing the views taken by the writer of the excellent article on the Horticulture of California, in your January number. The greater part of his views I most cordially indorse, but to some, I am compelled to take exceptions, because in direct variance with my own personal experience. Mr. Flint says: "Much controversy is had respecting the mode of cultivation, so as to encourage surface or tap-roots. My experience is in favor of surface feeders, which are within the reach of atmospheric influence; such cultivated trees come into bearing sooner and produce finer flavored fruit." Now will not the effect, produced upon tree and fruit, depend much upon the nature and condition of the subsoil, its fertility, humidity and warmth? Has Mr. Flint, upon any one of the varieties of subsoil I have named, raised trees that are fair samples of the two conditions, viz: trees that have been grown from seeds and never transplanted, side by side—but at a proper distance—with those that have suffered removal and a certain destruction of all deeply running roots? If there is such an instance of tree-growing in the state, I would be glad to visit the locality and ascertain, first, whether those trees so raised from the seed, really have the tap-root—which can be ascertained by no other process than digging under them—and, secondly, whether the transplanted trees, bearing the "finer flavored" fruits, have not actually made strong tap-roots in their new position, to which, of course, the rule of Mr. Flint cannot apply, as such fruit is supposed by him, to be the product of surface roots only.

I can easily imagine a great difference in the flavor of the same varieties of fruits, grown upon the three conditions of soil I have named, even though all possessed a similarity of growth in their roots, arising from the different constituents of their soils and nothing else. Hence the fallacy, in my opinion, of attributing a certain

flavor to fruit, as arising from a certain condition of the roots merely, when the condition of soil cannot but have a very controlling influence. In the orchard of Capt. J. Aram, of San Jose, the curious or the inquisitive in these matters, can be pointed to trees that formerly stood in the nursery row, that now make a portion of the orchard, having never been removed. These trees, in direct opposition to the views advanced by Mr. Flint, are not only as vigorous, but the most fruitful, and the fruit equally fine flavored. These unremoved trees, raised from the seeds in the places they now occupy, may not have the tap-root, but the probability is they have, as they evidently suffer far less from the drought of summer, than trees that suffered transplanting, with a probable loss of the main tap-root, or, as the Chinese say, "the root that drinks only." I mention this fact in relation to the trees in Capt. Aram's orchard, as furnishing evidence directly the reverse of the experience of Mr. Flint; and now if Mr. Flint will show me the reverse of this, in trees growing anywhere in this state, then am I ready to admit, that directly opposite opinions can be honestly entertained, in reference to the utility of deeply running roots. I do not, however, think it enough that mere theory, based upon the supposition—for it is only supposition—that subsoils are injurious to vegetation, or in any way poison the healthy functions of the tree, should be substituted for matter of fact and ocular proof of the contrary.

There is another point in Mr. Flint's admirable essay that I would discuss for a moment, believing that such discussion may be the means of eliciting the truth. Mr. Flint says: "It is noticeable that, on the deep alluvial bottoms of some of our rivers, where the tap-root penetrates to a great depth, that the trees make a prodigious growth of sappy, spongy wood, destitute of fruit spurs." Will Mr. Flint have the kindness to point to the particular locality? The mere repetition of a fallacy, word for word, promulgated by the editor of the *California Farmer*, merely for the purpose of giving vent to his personal malice against Mr. Lathrop, of San Jose, is not what is desired as a guide in horticultural practice, unless it can be proven that it is not a fallacy.

The position assumed is this: That the roots of trees, running down to water, or trees that receive artificial irrigation, are forced into the production of "sappy, spongy wood, destitute of fruit spurs." But the orchard of Mr. Lathrop, which has received abundant irrigation, shows the very reverse of this; whilst Mr. Flint remarks, on page 295, speaking of the site the best for wine-producing vineyards, considers irrigation of secondary importance, "and mainly useful only in bringing the young vineyard sooner into the bearing of a greater quantity of fruit." Now it may be that an abundance of water will produce soft, spongy, fruitless wood upon the apple, and just the reverse upon the vine; but really, upon what principle in vegetable physiology such a proposition is based, I am at a loss to determine. Heretofore it has always been deemed a matter of the first importance, in view of present ruling prices, that fruit trees and vines come early into bearing. Now if irrigating the vine will produce this in accordance with the views of Mr. Flint, is it not of the highest importance that we irrigate? A single remark further and I am done with my

objections to a few of the views as advanced by Mr. Flint. It is evident he is not in favor of irrigation, and, with a sweeping remark asserts, that "vast injury is annually being done to young orchards and vineyards, by an indiscriminate use of water." Will Mr. Flint instance such orchard or vineyard? J. J. JOHNSON.

PRIZE ESSAY ON POMOLOGY.

BY WILLIAM SUMMER, POMARIA, S. C.

To which was awarded the Premium at the Annual Meeting of the State Agricultural Society of South Carolina, in 1858.

[CONTINUED FROM PAGE 307.]

THE PEAR.—The pear, in its original state, was astringent and useless for dessert; but, by gradual improvement, it is now rich and delicious, and, when grown in perfection, it is eminently distinguished for its great delicacy, its melting and exquisite flavor. Greatly excelling the apple in these particulars, it will be more generally adapted to all portions of our state. It will succeed in any ordinary good soil; provided the subsoil is dry, and does not retain too much moisture. In such locations it is subject to blight, and, in extreme sandy soils, when the trees are attacked, no remedies will restore them to a luxuriant condition.

The pear succeeds admirably, as a standard, upon the rich clay soils of the upper districts of this state. These soils abound in iron impregnations, and fine specimens, on such locations, have been grown, both of the largest size and the best flavor. We have seen trees of great size, planted at the first settlement of the country, by our ancestors, who were careful to bring over some seed of the varieties which they obtained in the fatherland. Many of these have proved good varieties; but the pear culture was even then in its infancy, and it was left with Professor Van Mons, of Belgium, to develop by his experiments, the hundreds of new varieties which were produced by crossing the different kinds. He produced many sorts which will go down to prosperity, associated with his name. Some of these, which have been fruited in England and at the north, have been rejected, as the shortness of the season prevented their ripening, and, when fruited here, have proven the best varieties for us. From the experience which we have had with dwarf pears, we are more favorably impressed with their complete success than ever. Dr. A. Hasel, of Georgetown, S. C., informs us that there are pear trees upon the quince, in that neighborhood, which are at least forty years old, and still in full vigor and constant bearing. Mr. Robert Chisolm has for many years produced heavy crops of pears in the vicinity of Beaufort. The Angers and Paris quinces, upon which they should alone be propagated, grow here with great vigor; and, from this fact, many choice varieties can be propagated, as dwarfs that do not succeed in colder climates, grown thus, require but little space, from eight to ten feet being sufficient, producing fruit in two or three years after planting, and are better adapted to sandy soils than standard trees. They should be trained as pyramids, branching within twelve inches of the

ground, thinning out the branches and shortening their growth one-half annually—taking care to preserve a leading shoot, which, though cut back, should always be done with a view to keeping and forming the tree into a regular pyramid—until they arrive at a bearing state, when they will require comparatively little pruning. Their particular adaptation to our climate, and early bearing, should give them a place in every fruit garden.

Good, thorough culture, and moderate manuring are necessary. From experiments, it has been ascertained that iron is a good element for the pear, and, as it requires but a small quantity, it is readily obtained; as the refuse from blacksmiths' shops, from machine shops and foundries, may be used when this ingredient is wanting in the soil. The land should be well cultivated, among pear trees, in some root or pea crop, and the manure used should be such as to give a moderate growth. Stable manure, composted with peat or vegetable mold, is excellent for dwarf pears. Besides this, use lime, ashes, salt, gypsum, for high lands; whilst charcoal, and a few coal ashes, when they can be obtained, are particularly beneficial to wet soils. Bone manure, soap suds and sweepings from the poultry-house, will be found valuable, when incorporated into the compost heap. The most formidable difficulty in the cultivation of the pear is the *blight*, known by the various names of the *fire-blight*, and *frozen-sap blight*, and *insect-blight*. The causes may be various, but the appearance is the same—a sudden withering or turning back of the leaves, on a portion of the limbs, during rapid growth, and often while the rest of the tree remains apparently in full vigor. The disease extends downwards, unless naturally or artificially checked, until the whole tree is destroyed. The causes have been closely investigated for years, by the most skillful cultivators, but, still, a satisfactory explanation, applicable to all cases, has not been made. The earlier theory was, that the hot rays of the sun produced the disaster—hence the original name "*fire-blight*." It was subsequently alleged that a small insect, (*scolytus pyri*) by the infusion of poison, caused the death of the branches. More recently the "*frozen sap*" theory has been extensively adopted. The explanation of this theory is as follows: A damp and warm autumn causes a late, unripened growth of wood, not able to withstand the effects of winter. It is acted upon by severe frosts, as was the case last spring, which brought on a sudden blight in the pear trees throughout the country. While this form of disease in the decomposition of the sap by which it becomes poisonous in its nature, and by passing downwards through the bark, is destructive to the tree; it still does not spread in its ravages like that of "*insect-blight*." However various the causes, there seems but one remedy, and its progress must be arrested by the immediate excision of the dead branches. The remedy, to be effectual, must be promptly and fearlessly applied. Many cultivators, through fear, do not cut far enough below the diseased portion, and leave the seeds of death remaining still within the tree. Others delay the application for a number of days, until the case is hopeless. In ordinary cases entire success will follow immediate excision.

We have many choice varieties of the pear which have been introduced from Europe, and every year some excellent native varieties are brought into notice by

amateurs. We may confidently expect, in a few years, to be supplied with such native kinds as will, within our latitude, carry the season of this delicious and wholesome fruit even into the spring. We here only enumerate by name some of the principal kinds fruited and proved to be adapted to our climate.

Madeline, Upper-Crust, Julienne, Bloodgood, Jargonelle, Dearborn's Seedling, Rostizer, Summer, Franc Real, Bartlet, Andrews, Buffum, Burns, Bosc, Beurre Brown, B. Aremberg, B. Gaster, B. Golden, B. Diel, B. Oswego, Brandywine, Charles of Austria, Doyenne White, Doyenne Grey, Delices Jodoigne, Duchesse d'Angouleme, Dix, Flemish Beauty, Glout Morceau, Lawrence, Moor's Pound, Niles, Philadelphia, Seckel, Steven's Genesee, Vicar of Winkfield, Winter Bon Chretien, St. Ghislain, Urbaniste, Winter Nelis, Washington, Louise Bon de Jersey, Novo Simon Bovier, Ott, Jaminette, Doyenne Alencon, Doyenne Downing, and others, which will be described in the appendix.

THE PEACH.—It is so generally cultivated that it would seem almost useless to urge its claims upon the attention of our people. All are aware of its usefulness, though it is too often propagated from the seed alone, by which means entire orchards are planted of comparatively worthless varieties. The best varieties only should be cultivated. These should be carefully budded, and a succession of fruit, from the Early Nutmeg, Early Ann and Early Tillotson, until the ripening on Scott's October can be obtained. A new impetus has been given by the successful growing of the early varieties for the northern markets, by the example of——Gregg, of Graniteville. When it is considered that our people have one month to supply the northern markets with this fruit, or until the first of August, before their peaches can be ripened, that many thousand bushels are required daily for the New York market alone, it will at once be seen that no fears need be entertained that an over-supply will be produced. Within the latitude of our state lies the proper limit for producing this delicious and wholesome fruit, in its greatest perfection; and, as it promises to be so remunerative, the best varieties should be cultivated extensively, to supply this increasing demand. For this purpose we would recommend Fay's Early Ann, Early Tillotson, Pierce's Early, Early York, Tice's Early, Summer's Early, Early Admirable, Amelia, Acton Scott, Crawford's Early, Crawford's Late, Chevreuse Hatif, Coe's Early, Troth's Early Red, Honest John, George Fourth, Red Rareripe, Yellow Alberge. These will bring in the regular peach season at the North, when it is not expected that we could compete with those who can supply the markets at home. Until within a few years past there was so much indifference to the cultivation of the peach that quite a deficiency of choice varieties were found to supply the season after the Heath Cling; but lately superior September and October varieties have been produced, keeping up a succession until frost. Among these, in South Carolina, may be mentioned Clennore Cling, Atwood's Late Cling, September Free, Chaplin's Late Red, and Chaplin's Green Cling—this last ripening as late as the tenth of October, and even at this season it has all the delicious and exquisite flavor of the finest peach of mid-summer.

The peach tree requires to be shortened in by cutting back the annual growth one-half. When trained by branching low, and with regular, well-formed heads, the fruit is much better, and the trees can better sustain their heavy crops of fruits, and are more durable.

The principal enemy which the peach, in our climate, has to contend with, is the borer (*Egeria exitiosa*). It cuts its way into the bark just below the surface, and frequently kills the tree. It can be destroyed by scraping away the earth from around the tree, and following the worm to the end of the hole with a knife. But to destroy them effectually, pour hot water in the holes around the tree. Those which have escaped the eye will be thus destroyed. An orchard thus examined in early spring and in summer few will escape. An easy and effectual method of counteracting the injurious depredations of the *Egeria exitiosa*, is to make hillocks of ashes about the stem of the tree in April. The eggs of the fly are deposited at the surface. In the fall, spread the ashes about the roots of the tree; the eggs thus perish, and the tree receives great benefit from the scattered ashes. As a simple preventive, the hillock may be made of earth, or saw-dust, or sheathing of hardware paper—twelve or fourteen inches may be tied around the stem of the tree, to prevent the deposit of the eggs, but in either case it must be removed in autumn. This precaution will, if pursued regularly, keep the trees healthy and thrifty.

The fruit is sometimes subject to worms, which more particularly infest the trees grown in gardens. The only remedy in this instance is, to pick up daily all the waste fruit that falls. In the orchard, give swine the range to pick up the waste fruit, and for this purpose cultivate in some crop that can be fed off by them, and occasionally by sowing down in oats, which must be eaten off green, early in spring: the droppings of the animals making up fully for the crop taken off.

The *Nectarine* is a variety of the peach, and requires the same training and general treatment.

THE PLUM, APRICOT AND NECTARINE.—These being thin skinned fruits, are subject to the attacks of curculio. As yet no certain remedy has been found to prevent their destructive ravages, but if planted about yards, and in clay soils, where the ground is hard and tramped, or where pigs and poultry can pick up the waste fruit, they will often produce abundant crops. It is hoped that the remedy which has been suggested, of planting these fruits on a location surrounded by water, thus preventing the ascension of the curculio, will entirely protect them. A location of this kind is not, however, within the reach of all who wish to cultivate these delicious fruits. The culture of plums, for the preparation of prunes, is an object worthy of the attention of our people. There are several varieties, such as St. Catharine's, Dutch or German Prune, Domine Dull, Inckworth Imperatrice, Fellemborg, etc., from which the best prunes are made, equal to those imported. The German process, simple and easy, is to heat them in a brick oven, at first barely wilting them, then heat them several times in a moderately hot oven, taking care not to scorch

them. They are pressed into shape each time as they are taken out, and regularly turned on the boards.

The ordinary varieties, such as the Damsons, are dried in the same manner, and are valuable for cooking, for making tarts, when stewed, being wholesome and nutritious. The plum requires abundant food in the soil to bring it to perfection; and where a plentiful supply of animal manure has been given, salt will be found highly beneficial. This should be spread as far as the roots extend, until the surface is white. Ashes, in soils devoid of lime, will be necessary. From a bushel to a bushel and a half, to a bearing tree, is the proper quantity. This application serves also to prevent the leaf blight or premature casting of foliage, which proves, in some seasons, a serious disaster to the plum, and prevents the ripening of the fruit.

QUINCES.—The quince is of easy culture, but requires to be grown in rich, deep soil, to produce large, fair fruit. The principal varieties are the Orange, Portugal, Rheas, Angers, Paris, Seedling. The Paris, or Fontenay, and Portugal ripen later, and are excellent varieties for preserving and baking. A few trees neatly trained and trimmed, should be grown at least in every garden. As a remunerative crop for market, it is worthy of general culture, the fruit always commanding a ready sale in our cities and towns, at good prices. Barn-yard manure, with salt in abundance, mixed a few months before it is applied, and spaded in around the tree, will render trees fruitful, and the fruit of the best quality. New plantations to be made in old worn-out soils, should have a liberal dressing of virgin earth, or leaf-mold from the woods. Ashes will at all times be beneficial in producing good, sound fruit, and prevent, in a great measure, the rot to which it is so subject. The trees should be mulched about the roots to preserve a moist temperature.

THE FIG.—The fig also deserves our attention. It is of easy culture and propagative, and there are now many choice varieties. The Brown Turkey, the Red Turkey, and the Celeste, are hardy varieties, and are the best for general culture. The White Nerci, the Alicant, and the Havana, are not so hardy, and only succeed well south of thirty-five degrees; but, with a little protection, and the advantage of shelter, they can be acclimated within the entire latitude of our state. They are easily dried, and every family could prepare a supply for their own consumption. The fruit is free from the injury of insects, and from time immemorial "the learned doctors" all agree in recommending it as a wholesome fruit. Give it, therefore, a place in your collection, and encourage your children to eat it, and it will be found beneficial to health.

THE POMEGRANATE comes up with the same associations of the fig, and from its fair and lovely fruit asks for a place where the climate favors its growth, and is an encouraging instance of the successful acclimation amongst us of a tropical fruit. There are several new varieties which promises well.

The Almond produces heavy crops of fruit, and, with a little attention, its culture could be made profitable.

The Jujube is hardy here, and has produced abundant crops of fruit in Beaufort.

The Spanish Maron Chestnut and the *Madeira Nut*, or *English Walnut*, both thrive well, and there are trees now bearing good crops of fruit. The fruit, when eaten fresh, is wholesome and agreeable to the taste. They could be made valuable if grown in sufficient quantities to supply our own markets. The road-sides should be planted with these trees; they would not only be profitable but highly ornamental.

THE STRAWBERRY.—The easy culture and abundant early fruit, coming as it does with the spring, makes the strawberry worthy of a place in every garden. The soil requires to be trenched eighteen or twenty inches, and made rich with vegetable mold and a compost of well rotted manure and ashes. The soil best adapted to its growth is a sandy loam, but any heavy land may be made suitable, by the addition of sand and vegetable mold. The plants should be set in rows eighteen inches apart and twelve inches in the drill. Plant in October and November in autumn, and in February and March in spring. The best early varieties are Longworth's Prolific and Albany. The Albany, or Wilson's Seedling is also a new early variety of the highest promise, producing abundant crops of fine large fruit, which continues productive for several weeks. The Moyamensing is also a good variety. McAvoy's Extra Red and McAvoy's Superior are both estimable varieties, the Superior being in every way worthy of its name.

The Hovey Seedling is planted for the principal crop—and with the Early Scarlet or Oregon Prolific Staminate, as fertilizers, it invariably produces most abundant yields. It succeeds the Longworth, and continues in bearing until the early orchard fruits begin to ripen. Should the weather prove dry at the season of flowering, the beds should receive copious waterings. This should be continued as long as necessary, as the fruit is much larger and finer flavored, and the Hovey and Albany, by this aid, may be continued in bearing until the first of July.

THE RASPBERRY.—Deserves a place in every garden, and a rich border should be prepared for it, so as to be shaded from the sun after 12 o'clock. The common *Black* and *Orange*, the *Catawissa* and *Ohio* or *Everbearing*, are native varieties, and succeed with a little care, and produce abundant fruit. The *Fastolf* and *Hudson Red Antwerp* are the best of the foreign varieties. *Brinckles Orange* and a seedling variety, produced here by Mr. Frances Bulkeley, of Gadsden, S. C., are both valuable new varieties.

THE GRAPE.—Of the first and greatest importance is the preparation of the soil. This should be thoroughly trenched to the depth of eighteen or twenty inches. This may be done with comparatively little labor, for vineyard culture, by the aid of a good turning plow, following in the same furrow with the subsoil plow; after which use the spade the same as in trenching. The soil best adapted to the growth of the grape is

that of a sandy or granite character, but almost any soil may be made to grow good crops with proper preparation, provided the subsoil be dry. Wet subsoils are in every instance injurious to the growth of the vine. Within a few years an increased interest has been given to the culture of the vine for making wine, and there are a number of small vineyards in our state which promise the best success. The *Catawba* is the grape principally used for wine making. The *Lenoir* and *Herbemont Madeira*, both of our own state, are excellent varieties, both for table use and wine. The *Scuppernon* is grown extensively in North Carolina for this latter purpose. It gives a wine of a peculiar rich aroma, and when we are properly skilled in the making and preservation of wines, we are persuaded that this peculiar property will add much to its reputation and value. Mr. Longworth, of Cincinnati, gives it, as his opinion, that we can make a superior wine of the *Isabella*. The *Herbemont* and *Warren* being one and the same, make mild wine equal to the best light wines of France, Spain, or Italy, and the best judges can scarcely detect the difference, when properly manufactured and kept. The *Isabella* is a vigorous grower and a most productive kind, and at the instance of Dr. Bachman, some vines were shortened in, after the fruit had been well set, and a second crop of fine bunches of fruit was the result, ripening in October. The berries of the *Isabella* are usually plucked too early. They should be permitted to hang until fully ripe, when they will be sweet and delicious. There are several other native varieties of excellence, which promise well, of which we hope to be able to speak more favorable in the future.

The vine should be enriched with ashes and decayed vegetable matter, ground bone dust and scraps of leather, which may be gathered about every town and village in the state, with manure from the poultry-yard, all of which are valuable materials, when buried about the roots. From three to four hundred gallons of wine may readily be produced to the acre, from the *Lenoir*, *Catawba*, and *Herbemont*, as they are most abundant bearers. The *Catawba*, though not so sweet as the *Isabella*, is, still, one of the richest grapes, abounding in glucose: hence its superior qualities as a wine grape. The superior specimens of wine which have been exhibited at our State Agricultural Fair, are convincing proofs that wine making is no experiment. We will not enter here upon the particular influence which would be exerted by the use of pure wine, as a means of promoting temperance, but we would most earnestly urge its claims as a promoter and preserver of life and health. Prof. Liebig says, "that as persons become older, pure wine is an important addition for preserving and keeping up the vital powers, warming and nourishing the blood, and that it is beneficial in gout and rheumatism, and all diseases of the kidneys." Plant, then, a few vines, as every person can, who has a few feet of ground, and provide your family, at least with a supply of wholesome and delicious fruit.

The rot is the principal thing to contend with in the culture of grapes. The proper enriching of the vine with bone dust and ashes, and the thorough draining of the subsoil, will all be important aids in effecting this, and when only a few vines are planted they should be protected from the heavy and drenching rains, by making a shelter, with boards on the top of the posts about two feet wide. The cuttings should

be grown at first in a trench, at a depth of eight or ten inches, and then transplanted in the vineyard. We are persuaded that the practice, as commonly adopted, of planting cuttings eighteen or twenty inches deep, is erroneous, and is a source of rot, the roots being forced to be thrown out in a soil too deep and uncongenial. Plant vines at a moderate depth, follow the suggestions of nature, and if the subsoil is properly prepared the roots will find their way, and penetrate to the required depth.

In conclusion, plant vineyards, beautiful and interesting, about your homesteads, plant orchards, rich with the apple, useful in its fruit, and glowing in its white tinged blossoms; the peach, with its lovely blossoms, warm with the breath of spring, and delicious in summer with its abundant fruitage; the apricot, the cherry and nectarines, beautiful in their early offerings; the pear, with its golden, melting fruit, always acceptable to the palate; the plum, with its rich, luscious, and abundant clusters; the fig, wholesome and memorable for its associations. Bring all these near your houses, and they will invite you to a love of home, and you will have done much to make home cheerful by enjoying these rural blessings and comforts of life.—*Farmer and Planter.*

ONION CULTURE.

EDITOR CULTURIST.—Can I grow onions on reclaimed tule lands? and what would be a proper preparation and culture? and at what time should I sow the seed?

TULE.

We have had no experience in the culture of the onion on tule lands. We hope some of our contributors who may have had this experience will impart it. In the mean time, we give the practice of Wm. E. Jones, of Kenosha, Wis., a correspondent of the *Prairie Farmer*. He gives the result of seven years' experience. He says the following are important to be considered and adopted, viz:

1. Ground that is gravelly should in all cases be avoided, unless the cost of removing the soil can be afforded.

2. Ground that is overrun with weeds or troublesome grasses should not be chosen until they are at first exterminated.

3. A situation that is shaded will not do; neither one that is too wet, for that will prevent working early in spring, which is essential to secure a large crop.

Another important item—the most suitable soil. It should be a light, deep, loamy one, though they will grow on soil, a large portion of which is clay; but not to a large size. The last named soil is not to be preferred, if size and quality are the objects.

I have found it important, in selecting ground for onion culture, to choose such as may be used an indefinite length of time for this purpose; by so doing the labor of first preparation is avoided each succeeding year, and each succeeding crop is more easily cultivated, provided the previous work has been thoroughly done.

PREPARATION OF GROUND FOR SOWING.—About the latter part of March, if the weather will admit, the ground should be manured deeply; and, if the soil be indifferent, it should have a large amount of well rotted compost thoroughly mixed in. Level it and thoroughly pulverize it. If the crop is to be cultivated to a considerable extent, the ground should be rolled; if properly done, this will add greatly to the value of the crop.

But allow me here to state that one great error among a majority of cultivators is, that they commit the seed to the ground before it (the ground) has been thoroughly prepared. Failure results often from such causes, and the cultivator condemns the article as unworthy of cultivation, or believes he must embody all wisdom and bestow the greatest care in order to be remunerated. But failures oftener result from unsuitable soil, or the bestowment of undue care, more than belongs to the natural requirements of the onion. But there are other items to be considered in the preparation of the soil. If the ground is plowed deep, early in November, it will not be necessary to plow again in the spring. This will save time, and the soil will be more thoroughly pulverized. Manure, if not well decayed, thus plowed under and mixed with the soil, will improve the crop.

SOWING.—Be careful what seed you sow. If you purchase it, obtain it of some reliable person, or a regular, honest onion-grower. Seed should not be over one year old, and should sink when placed in water. Sow the first or latter part of April. If the cultivation is to be extended, a simple machine or drill for depositing the seed is useful—a machine making two drills twelve inches apart, and dropping the seed in them at the same time. To cover use a hand roller, drawing it lengthwise the the drills. Let the boys do this; they are lighter and make smaller tracks than men. Get the drills straight, and be careful to keep them so. A person accustomed to it will sow three acres per day. Cultivate in drills by all means.

CULTIVATION.—I have heard it stated that onions planted thick will grow to no great size. The present season's experience proves the contrary. Onions that were sown thick, attained the size of twelve and one-half inches in circumference on ground that has been occupied with the crop for nine years. I think when onions have been grown on land a number of years, they will attain large size, even if thick. But it is usual and perhaps as safe to let the onions stand in rows eight inches apart. Keep them clean. No other culture is necessary. Stir the soil well every two weeks in the earlier stages of their growth, but not too closely about the roots, so as to injure the bulb. July is the most important month to the onion-grower; keep down the weeds.

REMARKS.—There is perhaps no crop more sure than onions. It is true they blight if neglected. The best varieties for cultivation are the red, yellow and white. The red are more generally admired; they are more hardy and grow better. The white variety requires more care in keeping, but are better for table use.

The onion-grower requires skill, which is only acquired by practice and persever-

ance. A new beginner should therefore commence on a small scale. No one should allow himself to be deceived with the idea he may become suddenly rich by growing onions.

CURING.—Let them remain on the ground after they are pulled, scattered about three days, then braid in wreaths two feet long; let them hang out of doors a week perhaps, and then carry into a dry cellar and hang up; they may be kept good in this manner until the next July.

TIME TO PLANT AN ORCHARD.

EDITOR CULTURIST:—In your December number, the question is raised as to the best time to plant an orchard. A discrimination, I think, requires to be made, not embraced in the answer given. I allude to the difference, as of clay or sandy soil. My first orchard planting was done in March and April, 1857. My soil is of clay, otherwise called "adobe"; when thoroughly wet it can only become dry by evaporation, and not by absorption by lower strata. If in a tillable condition, and covered with a fine surface it dries much more slowly. I supposed that our moderate winters admitted of what is considered the advantage of early planting, hence I feared that disappointment would result to my late planting as above, but was surprised that of the five hundred trees planted, but one failed to grow; they not only made a good growth the ensuing summer, but blossomed and produced some fruit. Still supposing that early planting would do yet better, in November, 1858, I planted five hundred trees more, consisting of apple, pear, plum, cherry, apricot and fig. I am not now surprised that the result has been quite a failure. The late winter rains began the last of January, and finished off in March; the water, or rather mortar, stood in the holes where the trees were planted long after it ceased raining; hence many of my trees were drowned to death, and the balance merely retained vitality, and started to grow a little, late in the fall. Fig and plum were the least affected; those most so, were cherry, apricot, pear and apple. I think the fig grows best planted early in any soil.

I suppose that early planting will do best in any soil that does not hold water. But clay lands should not be planted, or there is danger of doing so before the winter rains are over. It is best, however, to dig holes and dig or procure your trees in the early part of the winter, for as the roots cut in digging must heal before new roots can start, and this healing process requires time. Trees intended for clay land, should be dug before the winter rains, and keeled in, in sandy or non-retentive soil until spring. In the meantime, the process of granulation will be going on, and such trees, if well planted in the spring in clay, will grow well, and if the ground be in good condition, they will continue to grow until checked by autumn frosts.

C. M.

PRUNING TO INDUCE FRUITFULNESS.

EDITOR CULTURIST:—As a novice in fruit culture, I was very much pleased with your article in the January number on root pruning, in answer to YUBA's inquiry. In that article, however, a remark occurs that to me is possessed of very great interest; inasmuch as I find many of my young trees inclined to grow wood instead of fruit. On page 321, you say: "There is a far better mode of inducing fruitfulness in trees, than by the destruction of their roots." Now, though I am satisfied, from what you have said upon the subject of root pruning, not to attempt its practice for the purpose of inducing fruitfulness, yet that "better mode" of which you speak would be very acceptable information.

AMONG THE MOUNTAINS.

There are various modes by which the object can be secured, either one of which we deem preferable to root pruning. Their adoption may depend much upon the condition of the tree, its habit of growth, fertility and moisture of the soil and peculiarities of climate. Where the habit of unfruitfulness arises solely from an apparent exuberance of growth induced by a sterling fertility of the soil, almost any method that will detract from the effect of that fertility upon the tree will effect the object in a degree. The culture of plants, vegetables or grasses around the tree, by which a portion of the fertility of the surface soil is abstracted or kept from acting directly upon the tree growth, will almost, in all cases, cause a tree to set its fruit buds more profusely than though the full vigor of wood growth had been permitted. In a California climate, however, care should be had that the vegetation so produced does not in a too great degree abstract the moisture from the soil, to the detriment of the fullest development of the tree's fruit.

In the Atlantic states, where the rains of the season are continued into and through the summer months, seeding down an orchard to grass or clover, will, whilst it checks the growth of wood, increase the fruitfulness of the trees, without the least detriment to their vitality or health; but whether the same practice can be followed here, with no summer rains, and without irrigation and with no detriment to the fruit, remains to be determined by experiment. The probability is, that where moisture is abundant, certain crops of vegetables of low growth, can be very advantageously grown, even in our climate, among trees where the habit is a too exuberant growth of wood. The strawberry, for instance, can be advantageously used for this purpose; and, though in itself not as productive as when it occupies exclusively the whole ground, is, nevertheless, far less injurious to the orchard growth than many other crops that might be substituted. No grain crop should ever be permitted to occupy orchard ground; for, besides the tendency of all tall growing vegetation to cause the limbs of trees in close proximity to assume an upright growth, to the great detriment of their perfect symmetry, all the cereals, if permitted to mature their straw, are exceedingly injurious to trees, from the too bright and heating reflection of the sun's rays.

Another mode sometimes adopted to produce the same effect, is that of changing

the constituent food of the tree. Thus, a soil in which humus or a large quantity of vegetable matter is contained, if sufficiently warm and moist, will produce a luxuriant growth of wood over one inclining to sand or the calcareous. If to such soils, abounding in an excess of humus, a considerable addition of lime or ashes be made, the effect is to check the wood growth, whilst a greater fruitfulness is as certainly induced. All limestone lands are peculiarly favorable to the growth of the apple tree and its fruiting. Removing to a depth of four or five inches of the surface soil, and replacing it with a less stimulating one, as of sand or gravel, will also produce a similar effect; a practice, however, that is not applicable to orchard culture or tree-growing upon a large scale, from the trouble and cost attending it; but, in the garden of the amateur, it is often successfully followed.

The last mode to be described in this place is the one which, though not always the most effective, is of the easiest application, and when judiciously practiced, will, whilst it generally secures the object, work no injury either to the health of the tree or the fertility of the soil. It consists not in pruning, but *cutting-in*, or shortening the limbs of the trees at the proper season. Cutting-in the limbs of trees is practiced at different seasons of the year for three very distinct purposes. Firstly, to give symmetry to the tree; secondly, to promote the setting and growth of fruit spurs and buds; and lastly, to cause the new growth of wood to ripen fully before the autumnal frosts shall injure it. For the first, the cutting-in should be performed both in winter or early spring before vegetation starts, or upon the new wood of the present season; and, if upon the latter, then never later than the middle of June or first of July in most of our California climates.

To secure a concentration of sap, for the purpose of promoting a growth of fruit buds and spurs, cut back from the middle to the last of August, about one-third of the length of the growing wood; upon the larger and more luxuriant limbs, one-fourth their length is enough. A further observation may not be amiss here. If a more severe cutting back, amounting to an injudicious one, be given at this season of the year, instead of promoting the growth of fruit buds, an entire new growth of fresh wood is induced, which is a complete perversion of the object sought. Practice and observation alone, can render a man an adept at cutting-in fruit trees judiciously. For the perfect maturation of the season's growth, as a preparation for the frosts of winter, the cutting to the extent of one-fourth of the extreme ends of the limbs of peach and such other trees as continue in growth, made from the middle to the last of September, will cause the wood of the remaining portion of the limbs to mature and harden more fully than otherwise would be the case. A judicious cutting-in, we believe, from a long and successful practice, to be a mode to induce the fruitfulness of trees, decidedly superior to root pruning.

THE process of solidification is being applied to sweet cider, so that five quarts are reduced to one, which becomes a jelly, and can be made sweet and liquid cider again by the addition of water.

THE NAKED FALLOW—GOPHERS.

EDITOR CULTURIST:—Your correspondent C. M., in the December number, in an article headed "An Old Theory," has thrown out some hints, which, if acted on could be of immense benefit to the farmer on the Pacific coast.

Many a farmer has undoubtedly noticed, on plowing ground impregnated with kali or any other salts in excess, that, after being exposed to the sun's rays for a time, the surface would be covered with a crust of said salts; hence it is undoubtedly true, that all soils would be benefited by pulverizing and being left exposed to the rays of the summer's sun, to be replenished by the great laboratory of nature of the fertilizing principle of all plants, but more especially to those adapted to the cereal class.

Hence, of what practical utility this would be to the grain farmer who has already armed his lands with yearly decreasing yield. Take, for instance, the farmer who cultivates his three hundred acres in grain, which will require four teams to put in his crop; he will, the first season with his four teams, plow and sow the one-half of his land, and get it in in good season, so as to ensure a good crop; and the balance he could plow at his leisure before the spring rains had ceased, which would be ready to sow at or before the commencement of the ensuing rainy season; and for the second year and thereafter he would require but one-half the team and labor to get in his crop, or he would sow more than he would plow the same season.

Now the question is, would he be the gainer by adopting this course? We think he would, for the following reasons: In the first place, he would be enabled to annually get his crop in so as to receive the benefit of all our winter rains, and, however slight, would ensure him a fair crop.

Secondly, he would, by leaving the balance of his land exposed to the rays of the summer's sun, to be replenished by the capillary attraction from the subsoil and lower strata of the fertilizing principle to enrich the coming crop.

Thirdly, he would then require but one-half the animal labor and teams, and if he did not raise as much grain—which I think in many cases he would—as from planting the whole, it would be much cleaner and plumper, and hence command a better price. He would, by this method, be enabled to exterminate his noxious weeds; and, what is of more importance, he would be enabled to destroy that destructive pest to the farmer, the *gopher*, which he would literally starve out.

If our farmers do not pursue some mode to retain, rather than to diminish the productions of our lands, we shall soon be in a deplorable condition, tenfold worse than the worn-out lands of the Atlantic states, as the peculiarity of our climate would preclude us in adopting their cheap and feasible mode of clover and plaster.

And, again; by adopting this method, the farmer could better pursue a rotation of crops, and our markets would be supplied with a better article of grain, as his summer fallow, which would be the only land he would sow, would be clean, and if he sowed wheat he would not unnecessarily reap a mixture of all other grain, as he does by his present system of annually sowing all of his lands.



These, and other reasons which will suggest themselves to every thinking farmer, should cause him to change the present "skimming" system of farming, which is really impoverishing himself and his adopted state.

Plow Boy.

SAN LORENZO, Jan'y, 1860.

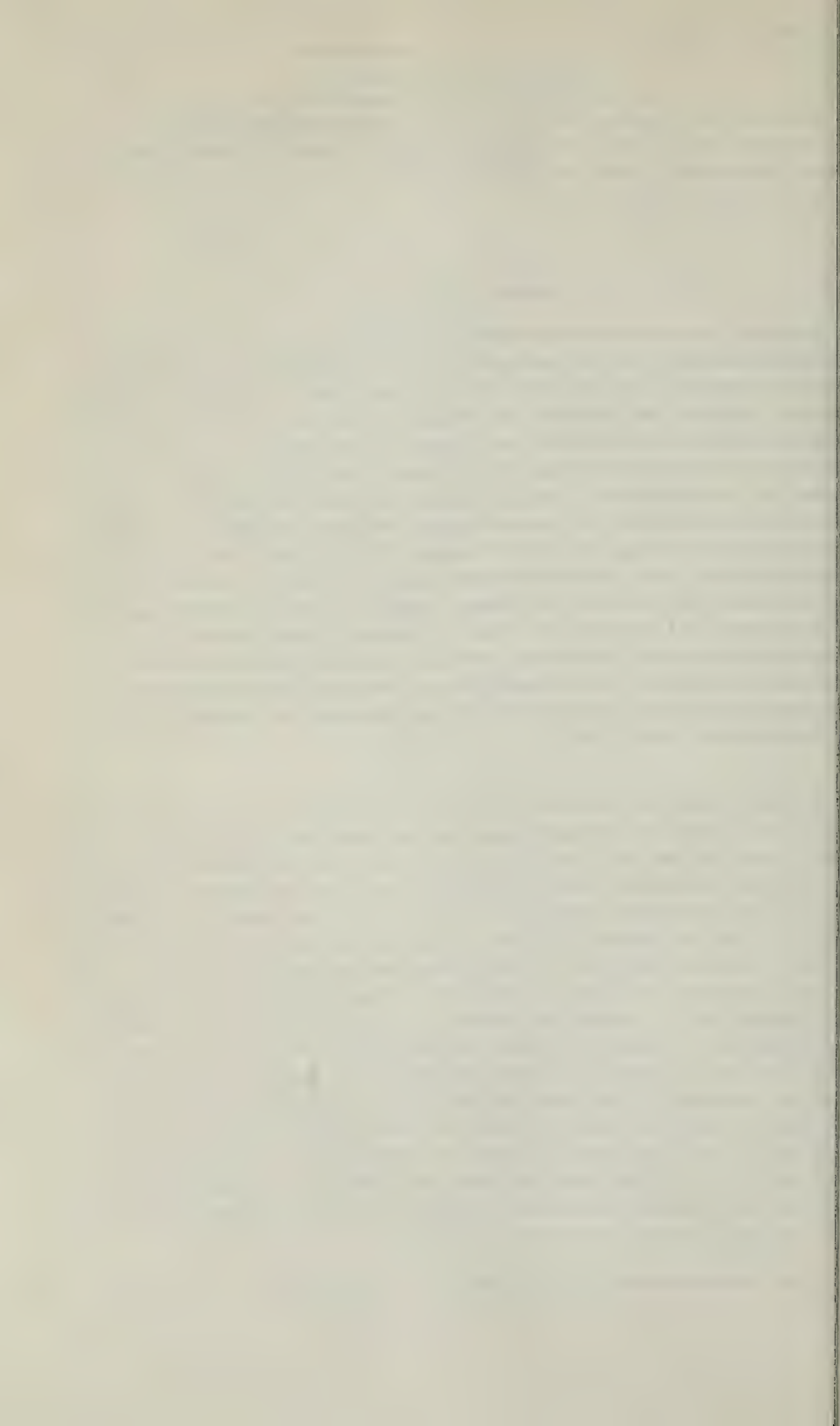
GRAFTING THE VINE.

EDITOR CULTURIST:—Seeing an article in your valuable journal the past winter on grafting the grape vine, and having several hundred of the Mission variety that were unproductive, I concluded I would try my hand at it. I grafted about one hundred vines, and out of which only about one-third grew. My mode was cleft grafting, in the root, when the sap was dormant. Now, perhaps you or some of your numerous readers could suggest a better mode, where the loss would not be so great; as we are satisfied, in this vicinity, that we cannot succeed with any but the earlier varieties of foreign grapes, and many, as well as myself, would like to make the roots of our old vines available if possible. Many of those grafts which I set last winter which grew, produced some fine bunches of grapes the last summer, and of fine flavor. And out of my six hundred vines of the native variety, which are now six years old, I have never yet picked a bunch of grapes that was fit to eat. The grafts that grew all made a fine growth, and some of them quite remarkable. If we could graft the vine with the same success as fruit trees, it would undoubtedly be the best way of cultivating many of the foreign varieties of slow growth.

SAN LORENZO, Jan'y, 1860.

E. T. C.

We have grafted the vine extensively and generally with success. Our method is, in case the stock is of a smooth, straight grained growth and will split free, to cleft graft—sawing off the stock below the surface of the ground and inserting the scion wedge shape at bottom, on each side of the cleft; that is, use two scions to each cleft, as in the ordinary mode of grafting the large limbs of orchard trees, and then using no wax or grafting composition whatever; heap the earth up around the stock and scion even with the lower bud. If both scions start, one may be cut away; or, if the stock is a strong one, both may be grown. Where the stock is difficult to split, plug grafting can be practiced with success. Bore with a sharp cutting bit, one or more holes into the surface of the stock, one and a half inches deep; fit the lower end of the scion by taking off the bark and enough of the wood to enable it to fit the hole just moderately tight on being forced into it by the strength of one hand. Draw up the earth around as before, and success is almost certain. The best season for grafting the vine I have found to be just as the buds of the vine were bursting into leaf, and for two weeks afterward, the scions being retarded in growth, till time of setting, by keeping them in a cool, moist condition. For further remarks on grafting the vine, see CULTURIST, first volume.



LETTERS FROM GERMANY.

Written for the Country Gentleman, by the Author of "*Peasant Life in Germany*."

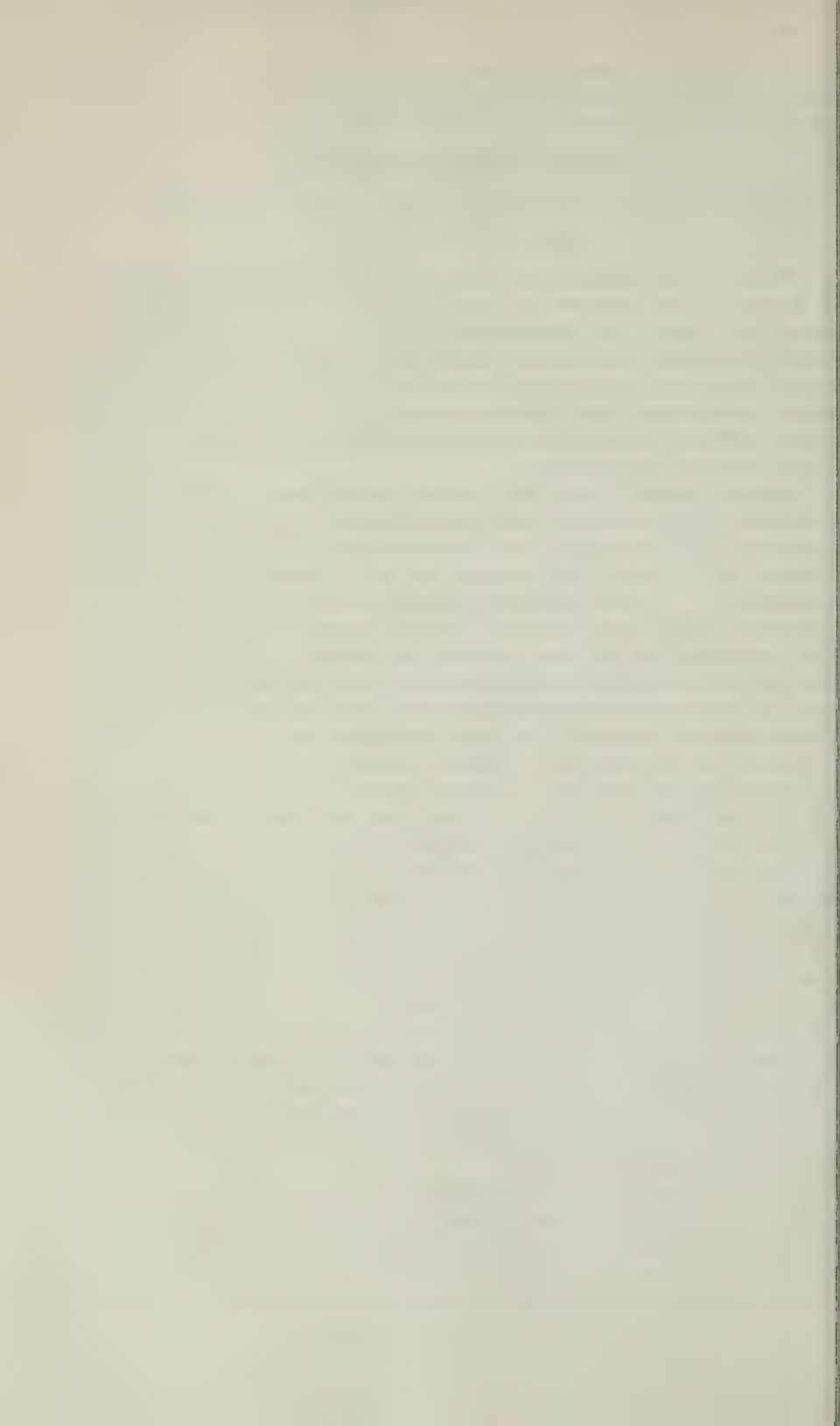
DOGS AND CATS—POULTRY.

I THINK it is not so usual to see a dog and cat in every house in Germany as in America. They do not seem so abundant or so domesticated. Where the halls are common property to a dozen families, a house does not seem so thoroughly a house even to human beings, and in these limited "apartments" there is not room enough for a dog and cat with comfort to their fore paws and noses. And, perhaps, another reason is, that it would be an expense which few could afford. We see plenty of dogs in the street, and sometimes a gray pussy on the stairs, but she is shy and does not understand our language.

Neither are hens and chickens visible, roosting upon the fences, or picking up seeds in the yard. They must be kept shut up to secure them from making depredations, as every foot of land is devoted to some specific purpose, and could not be spared to those who occupy so much space as master cock and his numerous family in their perambulations. Turkeys are nowhere so abundant, for the reason, we presume, that there is no "Thanksgiving" supper at which their presence is absolutely necessary. They are rare and dear, and we are reminded that pumpkin pies are still more rare. A few pumpkins we have seen here and there, and once a pumpkin pie, which a German family made according to the instructions of an American gentleman, and though it was very good and a real treat after having seen neither pie nor pudding for months, it lacked the genuine *smack* of a New England pumpkin pie.

A curious sight we have seen in country villages where many geese were kept. Like the people, they are subject to the laws of the land. An enclosure of a few rods or an acre or two, according to the number of geese, is set off by government, and a man appointed to go about every morning and collect them and drive them to this enclosure, where they remain during the day eating grass, and at night are driven home by the same keeper, though he does not guide them each to his owner. They are left to their instincts after arriving within the precincts of the village proper, and never fail of going straight to their own *goose pen*, where they find food, and where they are fed again before going forth in the morning. We once happened to be in the street when some two or three hundred were on their way, and they were suddenly thrown into consternation by fright. One might have thought Pandemonium was let loose. They flew twenty feet in the air, screeched and squawked, with their feathers flying like snowflakes, till the whole village was aroused to see what had happened. It was a quarter of an hour before they were quiet again and waddling with their usual dignity on the way.

Wild geese make their customary migrations from north to south and south to north, in the eastern as in the western hemisphere, stopping in Germany about two hundred and sixty days. House swallows are seen, not only in the country, but quite as cheerful and domestic in the noisy city, resting upon the window sills and picking



crumbs from the door-steps, as fearless as chickens and doves. It is said to be a peculiar kind of swallow, and to be seen only in Germany, though lately some have been transported to America; but we have not heard whether they nestle as cozily under the roofs of a republican *Stadt*, as in the crannies of these old worm-eaten castles.

THE STORK—BEES—CHAMOIS.—But there is one feature still more peculiar in the rural life of Germany. The kingly stork, marching like a veritable prince through his domains, is regarded with reverence and affection by all the peasantry. His nest is perched upon the topmost peak of some gable roof, and when we first saw one sitting there in all his majesty, we had no idea it was a living thing, but an ornament, with some slight pretensions to use, like a windmill or a weathercock. He is a bird of monstrous size, or perhaps appearing so from the length of his legs and neck, and the rest must of course be made to accommodate these proportions. It is with wonderful dignity and composure that they arrange their plumage and seat themselves, looking around like a queen from her throne.

They do not marry till the third year, and previous to this the bachelor storks occupy a tree by themselves, mingling very little in their walks, and observing at all times the most conventional propriety. Of course, they do not need nests till they wish to hatch young, and till this important event, they *roost*—if we may use so vulgar a term in speaking of their highnesses—in groups wherever it is convenient. Only one or two eggs are hatched at a time, and their love for their little ones is the same which characterizes all parents, whether among princes or peasants, kingly storks or turreting sparrows. But they spend only the summers in Germany, going as far south as Egypt for their winter. In their arrangements for going and coming they are remarkably punctual, and in one farm house at the north we are told that in twenty years they had not noticed the variation of a day in the time of their arriving and departing. Of the evening of the twenty-sixth of August they meet and discuss their affairs. On the twenty-seventh they may be seen walking quietly about, eating and beautifying their plumage, and however early one may rise on the morning of the twenty-eighth, there is not a stork to be seen. They have gone to the land of Canaan—to the land of the corn, the vine and the olive.

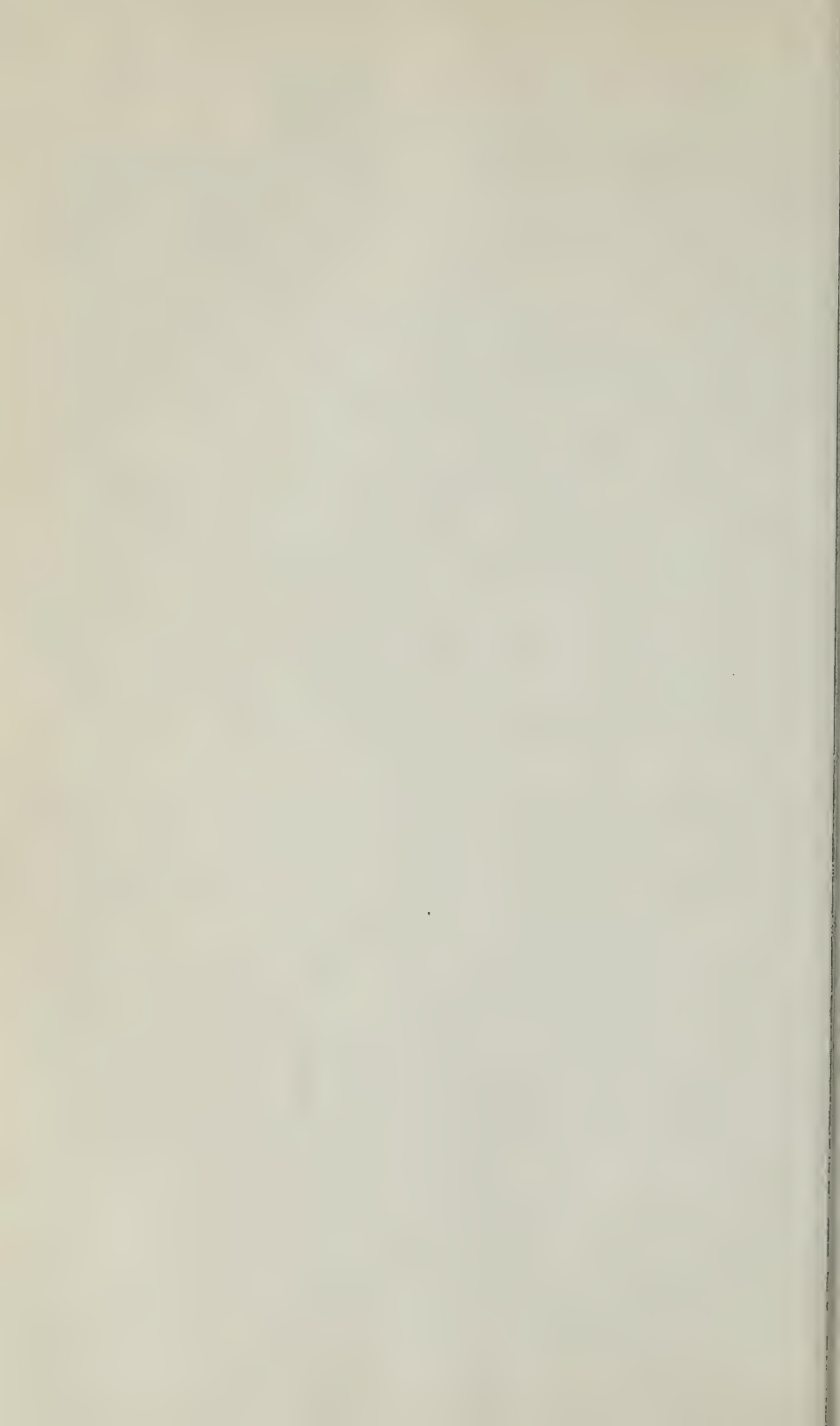
The hum of the busy bee is not often heard in the regions where the people live in villages, but among the farm houses of the north and south they gather honey from every opening flower, and one may at any time be regaled by the delicious fruit of their labors.

THE GOAT—THE CHAMOIS—THE DONKEY.—We often see goats kept in villages for their milk, and in mountainous regions they run about on the hills and *browse*, thus causing little expense for their keeping and being of great service. The chamois, too, is sometimes tamed and fondled like a dog; but in this state he loses his most interesting characteristics, grace and agility, though these are said to be the

there is often great difference of opinion. The longer the grapes hang out the better the wine is said to be, and often they are permitted to remain upon the stocks till snow is on the ground. But it is cold and cheerless work to cut them at such a time, and women protest against it. So for two or three weeks we heard the most serious family disputes—the men saying the time should be put off, and the women saying it should not, as the year before they had all been sick in consequence of cold, and wet, and exposure; till a family, ordinarily most harmonious and agreeable, was converted into a bedlam. We took occasion to say, if the women did none of the work they would have no right to a voice in the matter, but as they were compelled to do the principal part of the labor, it was right that they should have some decision about the time. As it happened, for once the women prevailed, and the weather was delightful; and it so happened also that if the men had prevailed, they would have had to gather grapes in snow-drifts, at great risk and exposure. Three successive days we went into the vineyards, not only to eat but to work, and learned that it was really very hard labor, as the stocks are never more than three feet in height, and we must stoop all the time while cutting. Yet from one of these stocks we have cut fifty large bunches of grapes. No vines are permitted to run. All the nourishment is concentrated in this one stock, and for this reason it is thus fruitful. Never did we know anything of the real deliciousness of grapes till we ate them upon the sunny side-hills where we cut them with our own hands. But how soon are the beautiful clusters spoiled in the great tubs into which they are immediately thrown, where they are pounded till the juice is expressed, and where it looks as if the pigs would loathe it!

Those who own vineyards do not even trim the vines themselves. A vine trimmer is appointed by government, who keeps watch over their growth, and comes with his shears to cut even the few which may be running over the sides of the house and fences. Where it is shady he cuts away the leaves, that the grapes may have the full benefit of the sun; and where it is too sunny he leaves them to shield the fruit from the too piercing rays. The trimmings he carries away as part of his reward—the leaves to fodder the cow, and the sticks to burn.

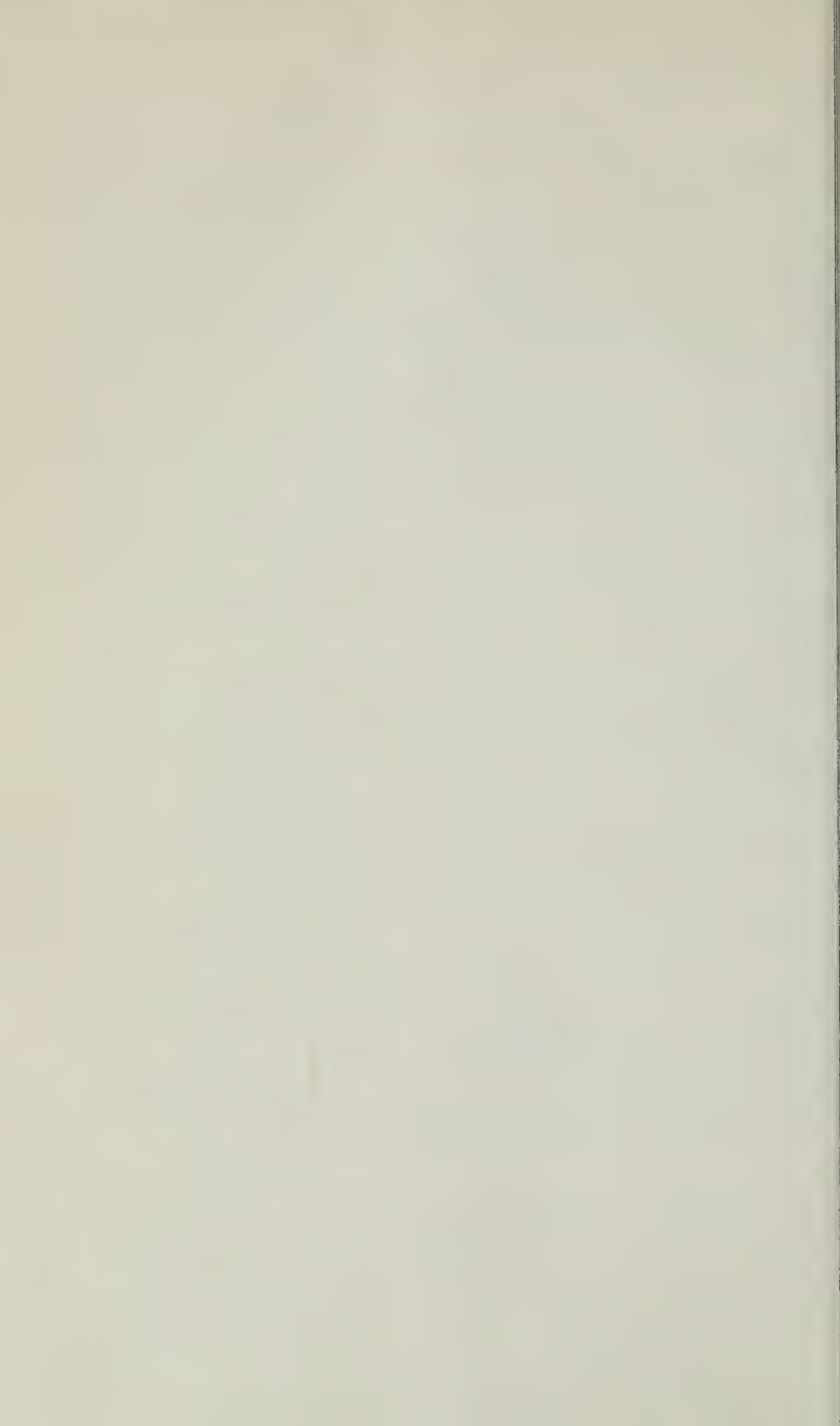
We do not see any reason why grapes should not grow almost anywhere in New England in sunny places, if the same pains were taken to give them nourishment and care, and almost every family might have a few without trespassing at all upon the room needed for the necessaries of life. There is a "sunny side" to almost every cottage, and for a few it would not be too much labor, or in any measure unwomanly toil, for ladies to train and trim them; and during the summer they would be beautiful, and during the autumn what a delicious treat; and though we think our fatherland excels all others in what is glorious and good, yet we do not think them quite perfect.



effects of culture rather than the gifts of nature. We can scarcely believe them when they tell us of the pains of the mother to teach her offspring to leap, and various arts to avoid danger; yet they assert that daily lessons are given during all their youth, and they are made to spring back and forth from rock to rock, first after the example of the mother and then alone, the distance being gradually widened, until they can bound with facility over ravines and cloven ledges as only a chamois is known to do, and we doubt whether any amount of teaching would give another species of animal the same grace and power. With the same pains they are taught to elude the hunter, and show wonderful capacity in learning and practicing all manner of deceptions. These, one must learn in order to hunt them successfully, and there is seldom a season that hunters as well as chamois are not left bleeding upon the mountains. The sport is so exciting in tracking and following them, that impossibilities are attempted, and the sportsmen sometimes persevere with the certain knowledge that death will be the consequence. But to see the chamois confess himself conquered and resigned to death, is almost as affecting and sorrowful as to see a human being. When he has once concluded that it is useless to resist, he lies down and without a struggle receives the death shot—his bright eyes grow dim, with a mournful expression of reproach and regret, but still saying, "I fought bravely, and will die a hero's death."

But we have no pleasanter associations with any member of the animal world than with the patient donkey. Fully have we learned to appreciate his virtues, for many an old castle and beauteous landscape would have been a sealed book to our eyes, had not the highest mountain and narrowest pathway been made thus accessible. We cannot understand why they have been ever such objects of contempt and ridicule, for they are not so very ill looking, even with their short legs and long ears. They are a pretty brown color, and form a truly picturesque scene with their scarlet and gay colored saddles and bridles in the deep forests, with a troop of ladies for their *knights*. How long and patiently will they climb and clamber, and though we have given them a thousand times occasion to exhibit all their refractory propensities, by misguiding, tumbling off and pulling them over, yet never did we see in them anything but the most delicate and honorable kindness! Only once have we heard a donkey bray, and this was horrible enough to be sure; but their vocal organs are not often exercised, and even the braying is no worse to hear than the howling of a dog; and when dogs are compelled to menial labors, as they here often are, they are as menial-looking as a donkey, and inspire no more respect. In the streets of German towns, we have seen a woman and a dog harnessed together to draw a cart, and in the fields a woman and a donkey, and a woman and a cow, to draw a plow; and women are looked upon with almost as much contempt.

THE VINEYARDS.—We saw at another time another evil consequence of women laboring in the fields. In a family where we dwelt when the vintage season arrived, the women were not accustomed to work out doors, except to gather grapes, but for this purpose they all went forth. About the best time to commence the vintage,



PRUNING THE VINE.

EDITOR CULTURIST:—I have a few more than one hundred vines of choice, foreign varieties, two years old from the slip. Nearly all of them bore the last summer from one to three bunches of grapes, and made a vigorous growth of wood. I am not experienced in grape culture, and desire certain information relative to the proper time of pruning my vines with the view of obtaining certain results. Can I prune them at one and the same time, and serve the double purpose of securing cuttings in good condition for planting, and promote their fruit bearing in the highest degree. The locality I have chosen for experimenting with the vine, I regret to find somewhat liable to late, spring frosts, which for two seasons have slightly injured the young growth. Will pruning at any particular season, or in any certain manner, tend to retard the early starting of the vine, with a view of escaping the effects of late frost? By giving an early answer to the foregoing inquiries, you will greatly oblige at least your humble servant

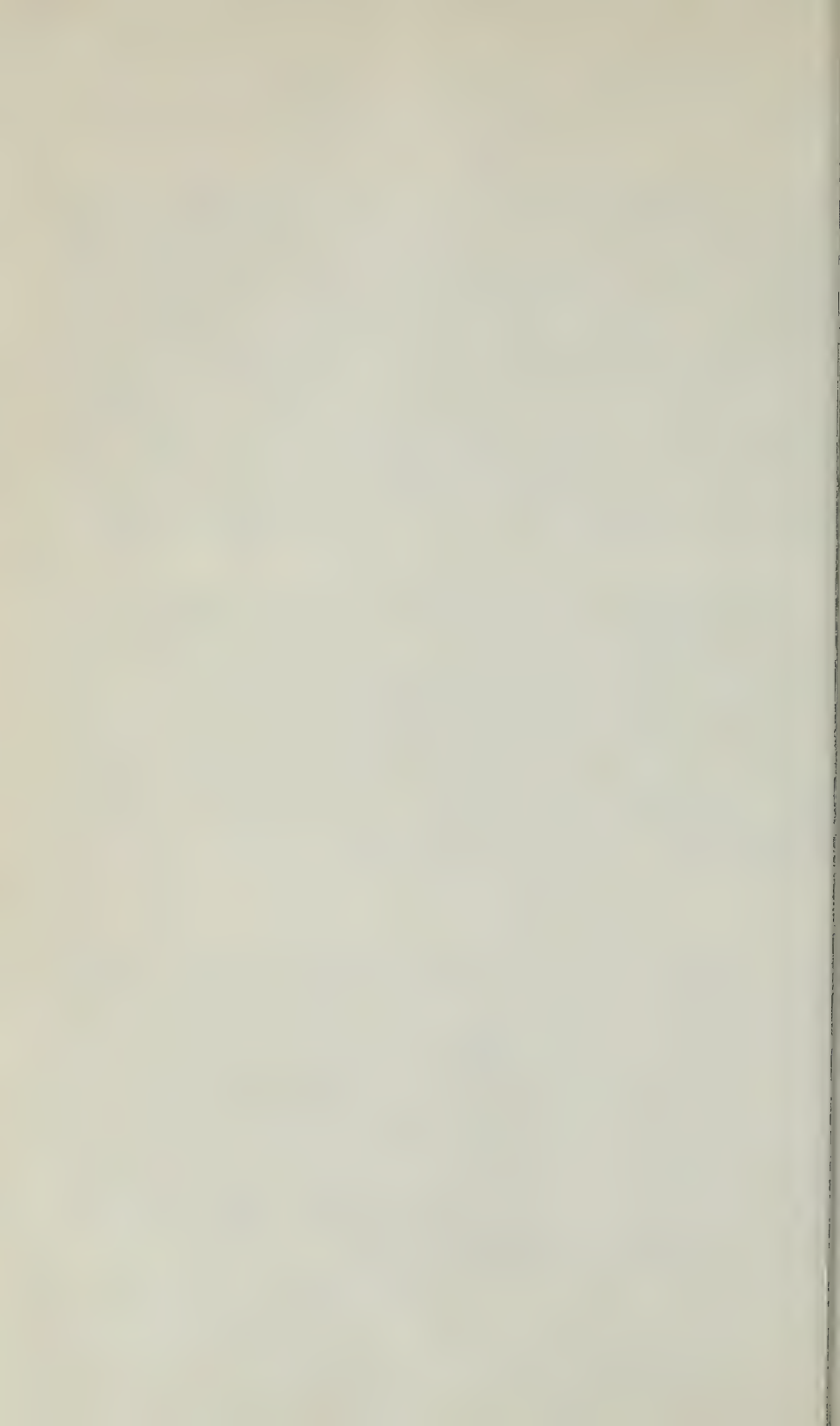
AMONG THE FOOT-HILLS.

The inquiries of our correspondent came to hand just a little too late for insertion in our January number. He will, however, find his queries answered in the excellent essay of Mr. Flint, on the Horticulture of California, pages 295 and 296. Experience has, we believe, already demonstrated that for the pruning of the vine with a view of securing the cuttings in the best possible condition for future growth, throughout the greater part of California, that season is the best immediately succeeding the fall of the leaf; the only exception to this rule being in those localities where the extreme cold of winter might injure the growing vine at the point of cutting. If such localities there are in any of the elevated districts, it would be better to defer the time of pruning till the approach of spring.

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PEACH ORCHARDS CHANGED TO ALMONDS.—EDITOR CULTURIST.—The near approach of the limit of profitable peach orchard culture, has led me to consider the most desirable mode of changing that investment. *Budding with almonds* has occurred to me as the most desirable method of arriving at this result without great loss of time and expense. I fear our tariff of labor will, for many years, forbid dried fruits, or the culture of any crop that requires large and rapid labor. The almond culture appears to me most free from these evils; but the points, Mr. Editor, in which I wish to be enlightened, either by yourself or some of your correspondents, are first, as to their liability to suffer by the early frost; second, if the care-taking and pruning is as troublesome as that of peach culture; third, the expense and labor, the method of harvesting the crop; fourth, how late may they be left on or under the tree? An early reply will oblige your correspondent

UP COUNTRY.





## SINGULAR ILLUSTRATION OF INSTINCT.

THE surprising faculty of vultures in discovering carrion has been a subject of much speculation, as whether it be dependent on their power of sight or of scent. It is not, however, more mysterious than the unerring certainty and rapidity with which some of the minor animals, and more especially insects, in warm climates, congregate around the offal on which they feed. Circumstanced as they are, they must be guided towards their object mainly, if not exclusively, by the sense of smell; but that which excites astonishment is the small degree of odor which seems to suffice for the purpose; the subtlety and rapidity with which it traverses and impregnates the air; and the keen and quick perception with which it is taken up by the organs of those creatures. The instance of the scavenger beetles has been alluded to; the promptitude with which they discern the existence of matter suited to their purposes, and the speed with which they hurry to and from all directions, often from distances as extraordinary, proportionably, as those traversed by the eye of the vulture. In the instance of the dying elephant referred to by me, life was barely extinct when the flies, of which not one was visible but a moment before, arrived in clouds and blackened the body by their multitude; scarcely an instant was allowed to elapse for the commencement of decomposition; no odor of putrefaction could be discerned by us who stood close by; yet some peculiar smell of mortality, simultaneously with departing breath, must have summoned them to the feast. Ants exhibit an instinct equally surprising. I have sometimes covered up a particle of refined sugar with paper on the center of a polished table, and counted the number of minutes which would elapse before it was fastened on by the small black ants of Ceylon, and a line formed to lower it safely to the floor. Here was a substance which, to our apprehension at least, is altogether inodorous, and yet the quick sense of smell must have been the only conductor of the ants. It has been observed of those fishes which travel overland, on the evaporation of the ponds in which they live, that they invariably march in the direction of the nearest water, and even when captured, and placed on the floor of a room, their efforts to escape are always made towards the same point. Is the sense of smell sufficient to account for this display of instinct in them; or is it aided by special organs in the case of the others?—*From Sir J. Emerson Tennent's Ceylon.*

CLEANING SEED WHEAT.—I met with several farmers during my late trip to Canada, who thanked me for publishing the way to clean chess out of wheat. One old man said, "Ah mon, you did us a good turn by learning us to clean chess out of wheat. I had been sowing and raising chess for forty years, but I read your plan in the *Montreal Witness*, ten years ago, and now neither I nor my neighbors raise any more chess."

JOHN JOHNSON.



## DEGENERATION OF BEES.

ARTICLES occasionally appear in the agricultural journals, upon the "Degeneration of Bees." Some writers attribute this want of continued success to breeding-in-and-in, and advise changing stocks with neighbors. Others state that swarms from old stocks have become so dwarfed that they lack strength, energy and numbers to secure sufficient stores to maintain themselves, and consequently must perish, and also affirm that this degeneration goes on with almost mathematical regularity from generation to generation.

An examination of the natural history of the bee makes one receive the foregoing with much doubt.

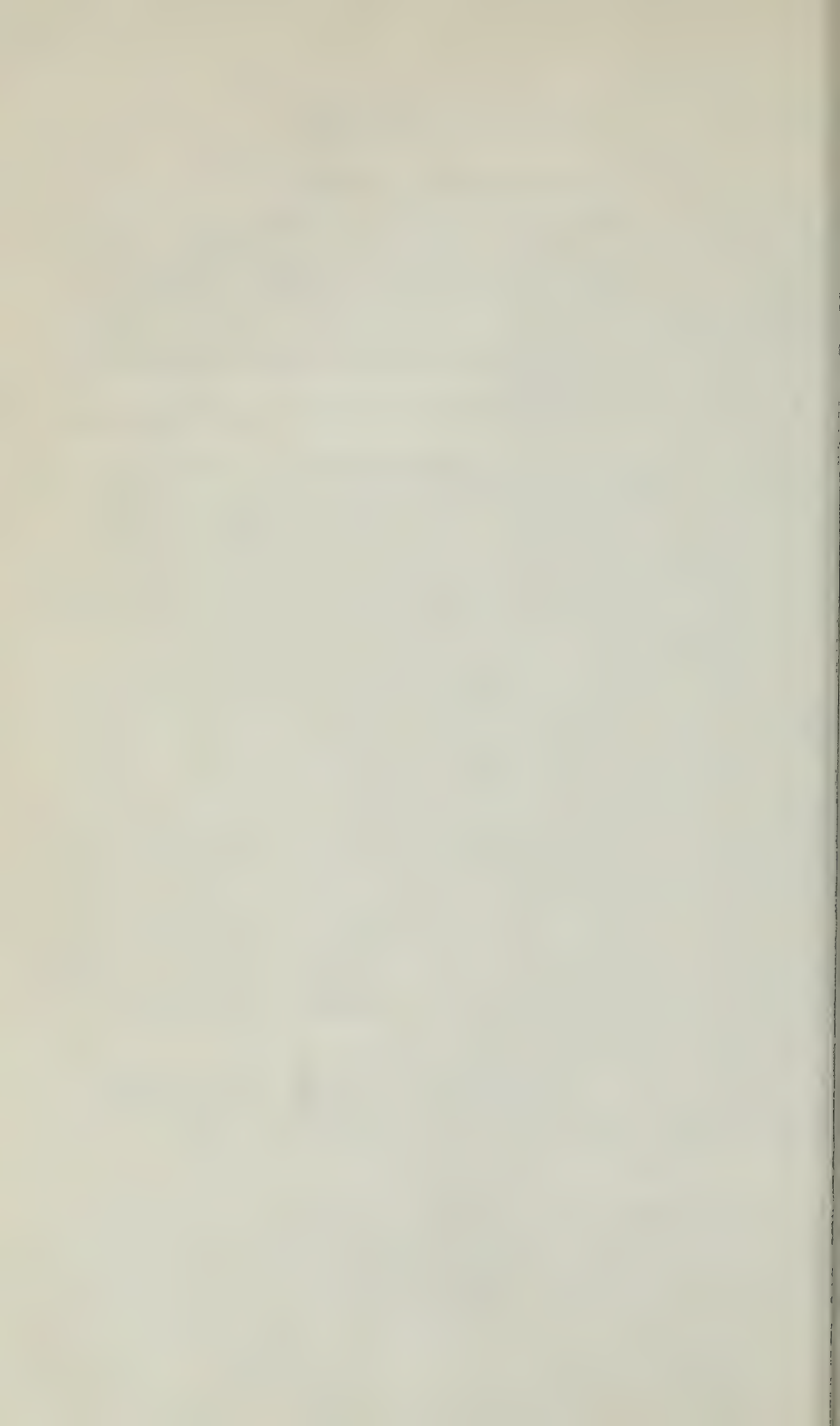
*First*—as to breeding-in-and-in. In most thinly settled parts of the country, and where few bees are kept, there are generally wild bees enough to prevent, with considerable certainty, in-and-in-breeding. Where many bees are kept there can be no danger from this cause. Those persons who take enough interest in their bees to change stocks with neighbors to improve the breed, will undoubtedly give their bees all the attention necessary to success, and they would, I think, succeed just as well without troubling themselves about the ill effects of in-and-in-breeding.

*Secondly*—Dwarfed bees can only be produced from old brood comb, the cells being smaller from the number of cocoons contained. However much dwarfed a new swarm from an old stock may be, unless they, in building new comb, build it of reduced dimensions, the offspring of their queen will be full size. I have never seen it mentioned that any one ever saw a *new comb of reduced sized cells, or a dwarfed queen*. Dwarfed queens are not produced. It is almost positively certain that only one queen is ever produced from a cell. After the queen is hatched the cell is almost entirely destroyed. After the swarming season, only a trace of queen's cells can be found, so that we can reasonably conclude that the young queens, hatched the following season, emerge from newly formed cells. The queen cannot, in new comb, produce dwarfs. The queen is impregnated out of the hive, so that dwarfed drones from her hive are not likely to injure the race. Superior strength probably rules with bees as much as with animals. We may conclude that dwarfage comes entirely from very old hives, and that with the death of the bees that have swarmed from an old stock, ends the dwarfs in the new hive.

The treatment of weak swarms, whether from old dwarfed or young stocks, has often been given in the *Country Gentleman* and *Cultivator*, and it is an important question in bee culture. A weak colony made strong by proper management, is just as good as a colony originally strong.—*Country Gentleman*.

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AN INFERNAL MACHINE.—A French farmer, proud of some turnips he had raised, sent one of large size to Louis Napoleon, recommending it for soup. The post office officials thought the packet was an "infernal machine," and the poor farmer, after being arrested, had hard work to explain to the contrary.



ROOT PRUNING.

EDITOR CULTURIST:—In an article in the January number of the CULTURIST, headed "Root Pruning," you refer to my experience, in support of your views on the subject. I am sorry to say that I differ with you. I have practiced root pruning, and am decidedly in favor of the process, under proper circumstances. As you know, the soil of my garden is a rich, alluvial loam, free of alkali, and needing no irrigation, and in it trees grow with great rapidity. When setting out my fruit trees, I had no experience in California culture, and therefore set them too close to each other. The result has been that, for two or three years past, I have been compelled to remove some of the dwarf pear trees, the latter having grown so rapidly as to overshadow the former. The trees thus removed had grown to a pretty good size, some of them measuring three inches in diameter at the root. The work was done with care, injuring the roots as little as possible; still, the process gave them a severe "root pruning." Notwithstanding their large size, they had not borne any fruit previous to their removal; but since that they have borne large crops. The effect was to check the growth, and to cause the tree to send out numerous short spurs, well supplied with fruit buds. Of course, their tops were pruned freely at the time of the removal. The process does not appear to have seriously injured the trees, as the greater part are now in vigorous growth, as much so as they ought to be to fruit freely.

Many of my fruit trees, in consequence, as I believe, of the luxuriance of their growth, have borne little or no fruit; and, having thus ascertained that "root pruning" was a successful mode of bringing such trees into bearing, last spring I pruned the roots of a large number. The way it was done was this: A trench was dug around the trees, about two feet from the body, about two feet deep, cutting off the roots that extended that distance with a sharp spade, and then the spade was run under the tree to cut off as many roots as possible. The effect upon the growth was very decided; with a few, the growth was almost entirely stopped; a few others were apparently unchecked; while the greater portion were checked to such an extent as to cause them to throw out numerous fruit spurs—and I have no doubt they will all bear abundantly this year.

When trees grow luxuriantly, the tops are usually pruned very freely, and consequently, the roots, if untouched, are in excess; that is, they supply an excess of nourishment, which causes the trees to send up numerous straight shoots bearing no fruit. Now, reason teaches us that the roots should be pruned, at least to an equal extent with the tops; and when the tree is growing very freely, I think they should be pruned rather more, so as to check the growth to a limited extent. After a tree begins to bear freely, then this excess of nourishment is taken up by the fruit, and the tree does not make such a luxuriant growth of wood; and such trees usually continue in bearing, and of course, need no root pruning. This check in the growth, whether caused by root pruning or the bearing of fruit, does not necessarily cause a permanent injury to the tree. I hope the next time you are in our city, you will give me a call and inspect my root-pruned trees.

E. B. C.

ABOUT TULE LANDS.

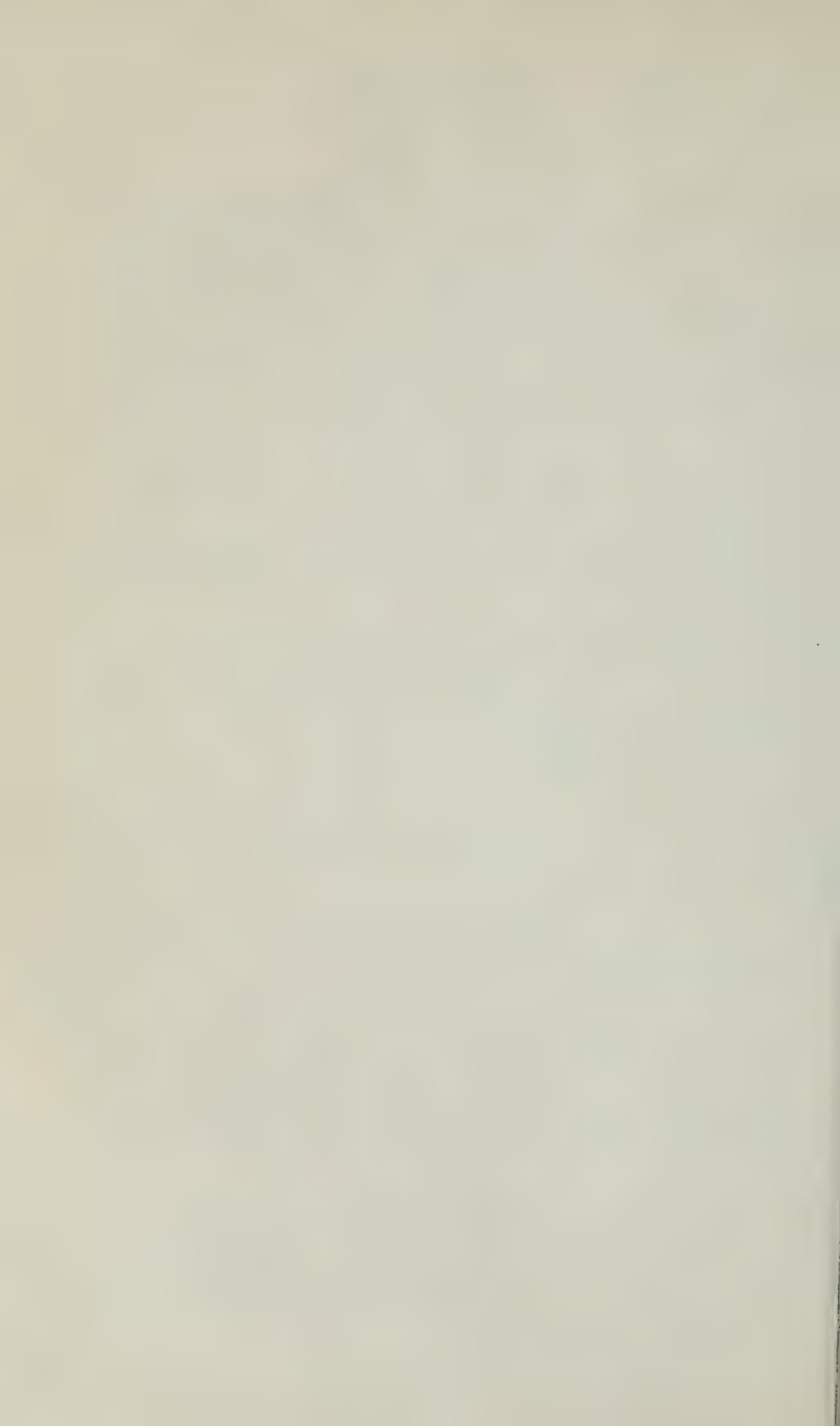
EDITOR CULTURIST:—To make good my promise, I will now give you all the information in my possession, in regard to the opening and reclamation of a tule farm. The first thing required to this end is the tule cutter and hook. The cutter is made much like a common spade, except that the blade is a flat piece of steel, one-eighth of an inch in thickness, eighteen inches in length and six inches in width. The best are made of an old mill saw—or a new one if you please—each side and one end beaten thin by the smith to prepare it for the grindstone, for it must be made very sharp. The handle is made of round bar iron, three-quarters of an inch in thickness; turn one end of the bar, say four inches, to a right-angle and split it in the center; then rivet it on to the end of the plate, which is not beaten, bringing the handle entirely to one side of the plate and not in the center, as in the common spade. The object in putting it to one side is, to enable the ditcher to get better foot room for pressing it down into the sod and chopping with it like an ax. Before riveting the handle on smooth with the upper end of the blade, turn the upper end, forming a loop for the hand like a spade handle; when finished, its length should be about four feet, blade and handle included.

The hook is made of half-inch, round iron, fourteen inches in length, turned in the center to an angle of about fifty degrees; point one end, and insert the other into a handle of any hard wood, three feet in length, about the thickness of a spade handle. Before inserting the hook, put an iron band around it to prevent its splitting, and you are ready to commence ditching.

The tule cutter works like a charm, and the credit of the invention is due to Robert Beasley, Esq., of the Twin house, Sacramento river. He is emphatically the inventor of this useful instrument; and, instead of getting a patent for it, as many would have done, filling his pockets thereby, he would listen to nothing of the kind; such as him are the *true men* after all.

In commencing the ditch and levee, it is well to look as to whether the river bank is washing away or making. If making, go as near to the water as you please, so that high spring tides in boisterous weather, breaking against the banks, spend their force before striking the levee; then lay off your ditch, say five feet in width, with a line, say six rods in length; take the cutter and sink the blade to the handle every time, until you have traced the whole length of the line; then turn the line on the other side and do the same thing; when done, wrap up the line and commence ditching. It might be asked, why a spade or shovel would not answer for this work. In tough sod, from three to five feet in depth, they are useless; but where the ditch approaches timber, they will do very well—for there sod gets rotten and finally disappears.

One foot from the edge of the ditch, set the first sods for the levee—these are the under sods, of course—then, seven feet from these, place the outside sods—this will make the levee seven feet from out to out. The sods, in good tules, are cut about three feet in length; these, in a seven feet levee, will leave a vacancy of about one



foot in the center. When the sod is all out, and piled on both sides one foot higher on the outside than inside, jump down into the ditch and throw out with a long handled, round bladed shovel, two shovelings of soft mud into the space between the sods, which makes it water tight and completes the levee. The sods, which are about ten inches square and three feet in length, are taken out of the ditch and put upon the levee with nothing but the hook.

The sluice boxes can be put in before or after the sod is taken out; they should be put in at the lowest tides in order to secure the most effectual drainage. The sluices on my farm are about one foot in depth; the best are made of two inch red-wood plank, from ten to twelve feet in length; the best working size for a sluice is eight by twelve inches in the clear, or inside; the clapper, or door, is put upon the outside end with two strap hinges; it is made of a piece of two inch plank. Before the door is put on, the end of the box or sluice is beveled to an angle of about forty-five degrees. On the outside of the clapper is attached a weight sufficient so that when the tide comes in, the clapper is prevented from floating—soon, however, the pressure on the outside is sufficient. Two spadings from the bottom of the ditch may now be thrown out, which completes what may now be called a good ditch. The ditch and levee together measure across, thirteen feet, the levee on the outside being about three and a half feet in height, and on the inside about two and a half feet.

I will have in two weeks from this time about one mile of such levee as this finished—weather permitting—and in the meantime, Mr. Editor, I shall be much pleased to show to any gentleman who will call to see me, an insight into the tules, that will set down and take a good dinner with me as a recompense. Such a ditch costs about two dollars per rod, and from three to four dollars if it passes through timbered land. About the first of May I shall be ready to burn off my land; this is done by simply setting fire to the sod in several places; and in July, under ordinary circumstances, I shall have one hundred acres ready for cultivation. On the burnt ground, the tides—all fresh water—are permitted to come in and flow the land for two or three tides, which leaches the ashes; when this is done the land is ready for planting or sowing. Some are opposed to burning; they say the ground is too low already; that to burn the sod, which varies in depth from six to fifteen inches, is to ultimately ruin the land, or at least, injure it seriously; but this is the statement of those only who have not tried the experiment.

The land that has been drained on Sherman Island, broken up and put under cultivation without the process of burning, has taken three years for the sod to rot; and when the ditches got foul so as to impair the drainage, the sod would suck up the water to that degree as to drown or destroy the crop, and in a very dry time, when the river is low, vegetation grown upon the sod would suffer for want of sufficient solid soil. I find that the sod land of the tules invites vermin of all kinds that are small enough to shelter in it. The last crop of potatoes of the season upon such land is inferior, and badly eaten by field rats. Now, how does it stand with burnt land? Mr. Philip Beasley burnt off a piece in the fall of 1858. In the spring of 1859 he put a part in wheat, the rest to potatoes. With regard to the wheat raised,

here is but one opinion; all who have seen it pronounce it the best in the state. Mr. Runyon, at the head of Steamboat Slough, who took the State Agricultural Society's premium for the best wheat, I am credibly informed acknowledged the tule grown wheat superior; whilst the yield went hard upon one hundred bushels per acre. The general opinion here is, that it would have yielded one hundred bushels per acre, if it had been properly threshed. The variety grown was that known as the Golden Chaff, the grains of which are nearly twice as large as were the grains of the seed sown. I herewith send you the samples of the wheat and await your judgment. We, upon the tules, want fair play, but ask no favors, though all our honors belong to us, and we wish to let the public know what a swamp that is drainable is worth in California.

Mr. Beasley's potatoes were very fine; the first shipment he made to San Francisco were bought up at once at an advance of half a cent per pound above the then market price, the purchaser engaging all he had. The yield was one hundred and fifty sacks to the acre. In flavor they are superior to the Bodega. I have not now a sample of his potatoes, but I will send you some of my own, grown on the same kind of land, and of a crop that was planted on the fifth of August—they were full grown on the fifth of November. This is at the rate of three crops per year, and allowing the land to rest three months at that. The upland farmer may say I am crazy; but I am in good health, and I know the above statement to be true to the letter. As an incident to the culture of potatoes I will state, that when Mr. Beasley went up the river to get a vessel to take his potatoes to San Francisco, he found a captain of a vessel who was so incredulous in believing the probability of potatoes being raised upon tule land, that he refused to be hired. Now the captain was not singular in this, being of the same opinion with some others; that is, that all tule lands are alike, or alike submerged by the waters of the river. Now let us go no further up than Sacramento city, and the river there has a rise of thirteen feet. At the head of Sherman, or Delta island, it is only one twenty-sixth part of thirteen feet, which is just six inches. The cause of the water being lower here at the delta, than at the city is, that it is taken off by three great exhausters—the Georgiana, Jackson and Three mile sloughs; below these, of course, there is far less danger of overflow, so that the nearer you get to the mouth of the Sacramento the safer you are. I had intended to say more upon the burning of tule lands, but I find my article has already attained an undesirable length.

Yours &c.

THOMAS CUBBINS.

FLIGHT OF THE BEE.

HOW FAR DO WORKER BEES, DRONES AND QUEEN BEES FLY FROM THE HIVE? I perceive that there is quite an interesting and animated discussion going on in your paper on the question, "How far will a bee seek honey?" The question might be extended, namely—how far will the inmates of a hive go for honey and other purposes? There is a difference of opinion among apiarians on the subject,

and to ascertain the truth is a difficult matter. Some think a bee will go from ten to fifteen miles for honey; others assert that two or three miles is the utmost extent of her wanderings; and others, again, are of the opinion that a circuit of a quarter of a mile around the hive is all the ground she occupies for pasture. I believe a worker bee will sometimes fly quite a distance from home. We often see bees in isolated places, far from the dwellings of man. The blossoms of the Linden, the Tulip tree, and other flowers rich in honey, attract bees from ten to twelve miles; but ordinarily I think they will not go farther than a mile. It is not probable that the drones will go far from the hive. They generally amuse themselves from twelve to three o'clock in the afternoon in making short excursions around their homes. They are gentlemen at leisure, have no particular care and anxiety about the welfare and prosperity of the family, and hence they are not at all ambitious to take a journey into a far country! But in reference to the queen, it has been proved that for the purpose of impregnation she flies quite a distance. Mr. O. Rothe, a German apiarian, has made an experiment on this subject which I consider altogether conclusive and satisfactory. He had in an isolated place only Italian drones, and yet the young queens he raised were often spurious or illegitimate. Even his young German queens, which were in a straight line of ten miles from his dwelling house, must have been after his Italian drones, since they have brought forth Italian bees. We must, therefore, not be surprised if early in the spring young bees become fruitful before we perceive drones among our own bees; they have merely visited a distant neighbor of ours who fortunately raised drones eight or ten days earlier than we did.—*Country Gentleman*.

GRAPE CUTTINGS—RAISINS.

EDITOR CULTURIST:—The business of vine planting, in our variable climate, seems yet to be an experimental one. Most of those engaging in grape culture have not the experience of other California culturists for a guide; hence an answer to the following queries, might interest your many readers—certainly it would *one of them*.

In the selection of grape cuttings for planting, would you choose that short jointed, fine wood from our higher plains and foot-hills, or that more luxuriant growth from the moist, black soil of our river banks? What is the proper length of a grape cutting, or, if it is variable according to soil, what rule determines its length? What is the best variety of grapes for raisins? Please find enclosed a small branchlet from a large cluster of White Muscat, of Alexandria grapes. They are a little dried and appear to me to be very good raisins. They were presented to me by Mr. Rich, who resides some six miles from the city, on our dry, sterile looking plain towards Stockton. Perhaps you may recollect Mr. R. presented some good specimens at the fair. The specimen sent was dried by suspending the branches on a nail in the kitchen.

Yours truly, J. R. RAY.

SACRAMENTO, Jan'y 13.

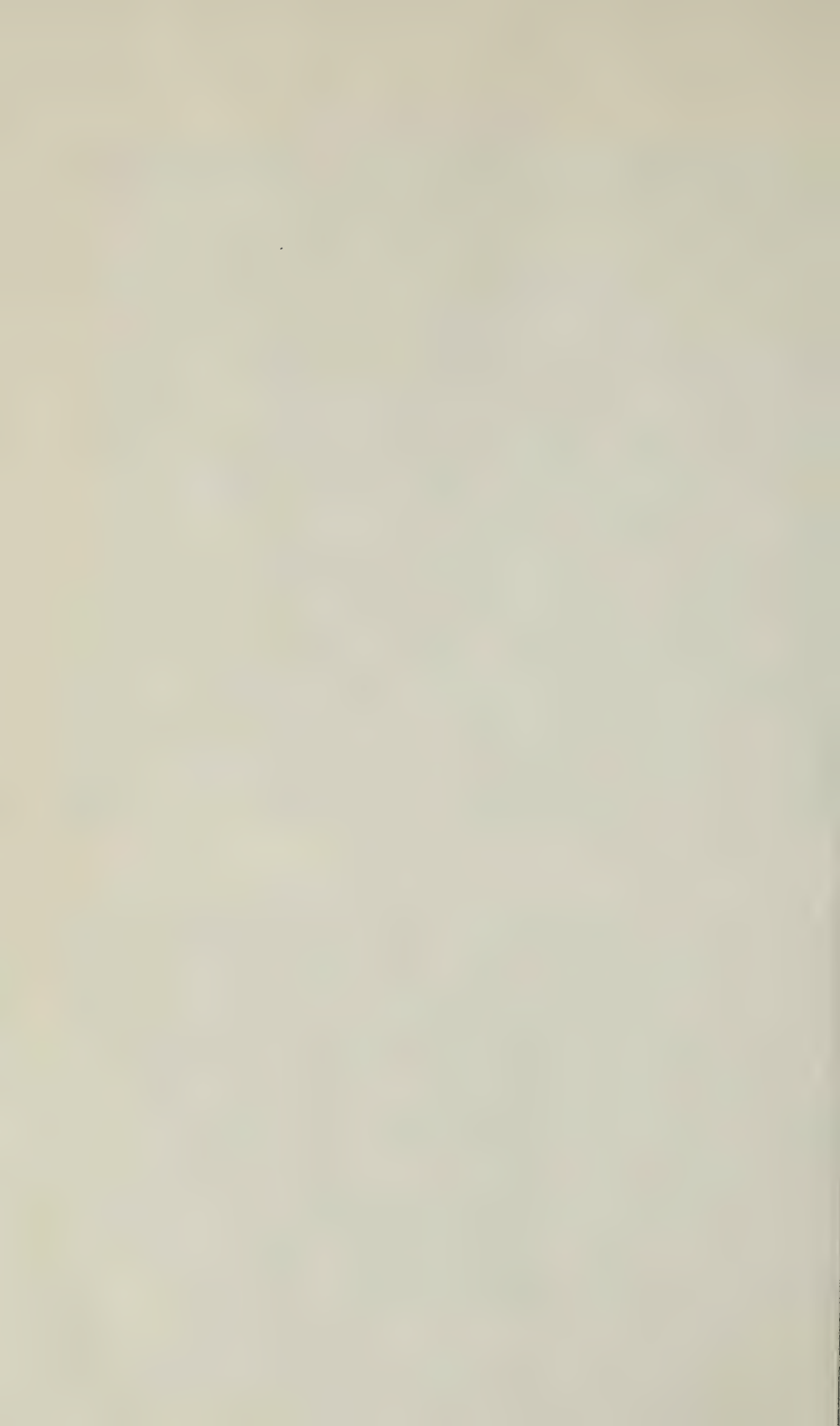
A very fair specimen of raisins, and only wish we had a few hundred pounds more of them. That the raisin grape can be raised to perfection in many localities of our state, has already been clearly demonstrated. It now only remains with the cultivator, to ascertain and put in practice the most approved methods of drying the grapes, and he is at once the producer of an article that has the world for a market. Several varieties of the Muscat family make good raisins, and certain localities will ere long be as famous for their raisins, as others will be for their wine product.

In procuring grape cuttings, the best culturists recommend fully matured and short jointed wood, and in theory the practice would seem to be irrefutable; but our own experience has led us to care but little for theory in this instance. If you take long jointed cuttings from the exuberantly growing vines of the lower valleys, and grow them in the higher and drier altitudes of our state, they will produce short jointed vines, and *vice versa* of cuttings grown on high grounds and transferred to the valleys. In either case the future growth is governed by the conditions of soil and culture. The only difference we could ever discern was this: That short jointed wood gave out the most roots, as they start from around the joints rather than at a distance between them. This only occurs, however, when the cuttings, long or short jointed, are of equal length, and all but the end bud placed beneath the soil. In regard to the proper length of cuttings, a difference of opinion exists. They can be of all lengths, from the single bud or eye, to three and even four feet in length, depending much on the mode of planting them. If cuttings are planted out perpendicularly in the soil, there can be little or no advantage in allowing them a greater depth than the warmth of the soil will favor the emission of roots therefrom, and this will depend entirely upon the nature and conditions of the soil and the effects of climate upon it. The subject of long or short cuttings was discussed at considerable length in volume one of the CULTURIST.

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**A RUSSIAN HOT HOUSE.**—Bayard Taylor thus describes the magnificent greenhouse, which the Czars maintain for the production and growth of tropical and other exotic plants, amidst the snows of Russia. "The botanical garden, in which I spent an afternoon, contains one of the finest collections of tropical plants in Europe. Here, in latitude sixty degrees, you may walk through an avenue of palm trees sixty feet high, under tree-ferns and bananas, by ponds of lotus and Indian lilly, and banks of splendid orchids, breathing an air heavy with the richest and warmest odors. The extent of these giant hot houses cannot be less than a mile and a half. The short summer and long, dark winter of the north requires a peculiar course of treatment for these children of the sun. During the three warm months they are forced as much as possible, so that the growth of six months is obtained in that time, and the productive qualities of the plant are kept up to their normal standard. After this result is obtained, it thrives as steadily as in a more favored climate. The palms, in particular, are noble specimens. One of them (a phoenix, I believe) is now in blossom, which is an unheard of event in such a latitude."





## STRAW AS A FERTILIZER.

AN improvident and general waste of the straw of our cereal crops, is too nearly a ruling feature of California husbandry. In all parts of the state—with few exceptions—where the raising of grain is the main agricultural pursuit, immense quantities of straw are annually consumed by fire; a most ruinous course so far as it affects the future fertility of the soil. The practice of burning the straw, seems to have grown out of the necessity of removing the vast quantities that annually accumulate around the threshing grounds; for either it must be burned or present large, unsightly heaps of a slowly decaying vegetable substance, unfit even for manure until after four or five years of decay, and then but imperfectly. To spread the straw upon the land to be plowed under, previous to decay and decomposition, as a manure for a succeeding crop, is found to be a bad practice in this climate of excessive aridity, where vegetable matter seems never to decay, even if mixed with the soil.

Some plan, other than burning, by which a more perfect and rapid decomposition of our great straw piles could be effected, would be a desideratum; and it now appears as though a method had been hit upon to effect it. Mr. Beardsley, of Suscol, proposes to so locate the straw piles from the threshing machine, that they occupy positions in the field where a stream of water can be turned upon them sufficient to entirely saturate the whole, as soon after the threshing as possible. If water is not then available, with the straw piles in low situations, plow a few furrows that, on the first flow of water from the autumn rains, may convey the surface water to them, and once completely saturated from the bottom, decomposition in the very best manner, for the production of the largest quantity of manure is rapid and complete. The reason why the rains of autumn and winter are not sufficient for the wetting is, that large bodies of straw effectually shed a large proportion of the rain that falls upon them and they are consequently not made sufficiently wet; but turn a very small stream of water upon the ground on which they lie, and capillary attraction will raise it through the entire mass, even to the very loose straw upon the top and sides.

A single season is found amply sufficient to rot the straw as effectually as four years by the ordinary natural process. A small quantity of the surface straw after the bulk of the heap is sufficiently decomposed, can then be burnt off, or removed and placed in pile to be acted upon by a like process. In this way the straw of one season can be made available the following summer as a manure, and returned to the land, a practice that should be adopted in preference to burning, by every one desirous of retaining the present fertility of his soils. "What shall we do with our straw stacks?" is the question lately put to the editor of the *Wisconsin Farmer*; and he answers in this wise:

"Why, sir, *burn* them, of course, like a — fool! That is *one* method, at least, and we are sorry to know that the number is not inconsiderable of those who by their stupid practice fully entitle themselves to the unpleasant epithet we have felt bound to apply to that class of farmers. 'But why not burn our straw? certainly that is

the *cheapest* way to dispose of it.' Well, there is one great reason why you should not, and that is, *because it is straw*—contains the *elements* which *make straw*—and is therefore *capable of being made up into straw for succeeding crops*.

This idea, that constant cropping, without ever restoring a single particle of the substance of the crop to the soil again, may be kept up 'world without end' is certainly the most ridiculous, stupid notion that ever found even a momentary lodgment in any head with a thimble full of brains.

Crops growing less and less every year, until they are already so meager as to carry disgrace with the figures, and yet this remarkable question, 'What shall we do with our straw stacks?'

But then, even the query is a ground for hope, since it implies, at least, some uncertainty as to the propriety of *burning*! We will, therefore, smother our indignation as well as we may, and proceed to answer it plainly and fully.

1. We apprehend that, by those who have much stock to winter, a goodly portion may be economically used for food. The season is likely to be pretty severe—at least we have no good reason to hope for a very mild winter—and fodder will be unusually scarce. Moreover, the straw of this year is unusually good, so that if properly prepared, sometimes by salting with a weak brine, but chiefly by cutting up, moistening with water and sprinkling with bran, it will not only be eaten with a relish, but really prove nutritious and wholesome.

2. A still larger portion may be used for the *bedding* of stock, and thus serve the double use of affording comfort to them, and of saving much valuable manure, liquid and solid, which would otherwise be lost. Don't be stingy of it, but use as much as possible in this way, carefully removing it when wet and supplying its place with fresh and dry.

3. What cannot be used as above, either cart out upon your fields to be plowed in the spring, or compost—of which more another time—with alternate layers of muck or rich, porous soil until pretty well decayed, and then cart it out. This is what *we* used to do with our straw stacks; the end being never to 'get rid' of, but to save them for after use. If any man knows a better plan let him tell it." H.

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## ART, SCIENCE AND INVENTIONS.

PERPETUAL MOTION—AT LAST.—About six years ago, we published the first description of a machine, invented by Mr. James G. Hendrickson, Freehold, New Jersey, "to go of itself." A model, which Mr. Hendrickson had made after patient whittling for forty years, was brought into our office, and we found that it would go without any impulse from without, and would not stop unless it was blocked. The power was self-contained and self-adjusted, and gave sufficient force to carry ordinary clock-work without any winding up or replenishing. In short, we saw no reason why it would not go until it was worn out. Our announcement of the fact brought out a great deal of ridicule; the incredulous pointed at all of the projects to obtain



a perpetual motive power which had failed in the past, and predicted the same disgrace to the new invention. Many scientific gentlemen visited it, and although they could not dispute the fact that it was "going," they nearly all attributed the movement to some hidden spring or ingenious trickery. The inventor was an old man, who had spent his whole life in pursuit of the object he had now attained. He had become so much accustomed to ridicule, that he was very patient under it; and the only reply he made to the cavilers who pronounced the thing impossible was—"but it does go!" The notice which we printed attracted the attention of the curious, and for the first time in his history, the inventor found a profit in his handy work. He was invited to be present at various fairs and exhibitions of new inventions, and wherever he went his machine formed one of the chief attractions. Science, however, turned up its nose at him, and determined to put him down. The professors were all against him, and as they had pronounced the whole thing a humbug, they were determined to prove the truth of their assertion. Accordingly, Mr. Hendrickson was seized at Keyport, N. J., for practicing "jugglery," under the "act of suppressing vice and immorality." At the trial, several builders, millwrights, engineers, and philosophers were called, and testified positively that no such motive power as that alleged could drive the machine, and that there must be some concealed spring within the wooden cylinder. There was no help for it; and the imposture must be exploded. An ax was brought, and the cylinder splintered into fragments. Alas for the philosophers, there was no concealed spring, and the machine *had gone of itself!* But alas, also, for poor Hendrickson, the machine would go no more.

With trembling hands he again resumed his spectacles and his jack-knife. His model once more completed, he had a new machine constructed of brass, hollow throughout, so that the eye could examine all its parts. This was brought to our office nearly two years ago, when we noticed it once more, and gave to our readers some of the facts we have now recalled. The inventor was trying to secure a patent for this discovery, but the work went on slowly. The Patent Office required a working model to test the principle, and one was sent on to Washington. The moment the blocks were taken out, the wheels started off "like a thing of life," and during ten months that the model remained in the Patent Office, it never once stopped to breathe. The inventor had perfected two machines, and made a very comfortable livelihood exhibiting them, prosecuting his efforts meanwhile to secure his patent, intending to apply the power to clock-work, for which it is peculiarly well adapted. Age crept upon him, however, before this point was reached; his highest art could not make his heartbeatings perpetual; and last Saturday afternoon he breathed his last, in the old homestead at Freehold. He had been so much persecuted by the incredulous, that he had provided a secret place beneath the floor of his shop, where his last two machines were deposited. It was in the form of a vault, covered by a trap-door, which was locked, and the floor so replaced as to avoid suspicion. After his last illness commenced, he made known this secret to his family, who examined the spot carefully, and found the contents exactly as described. The night after his death, the shop was broken open, the floor taken up, the trap-door pried off, and both

models stolen. It is probable that the family in their visits had not taken the same precaution as the inventor, and some prying eyes had discovered the secret. Fortunately, the drawings are preserved, and there is a little machine, one of the earliest made, now running in Brooklyn, where it has kept up its ceaseless ticking for nearly six years. Mr. Hendrickson leaves a family of four sons and four daughters, all of them, we believe, given to inventions. Had he died ten years ago, how emphatically would it have been said that his life has been wasted in "the hopeless effort to obtain perpetual motion."—*New York Journal of Commerce*.

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**IMPORTANT DISCOVERY.**—Quite recently, while walking in the garden with the Hon. J. W. Fairfield, Hudson, N. Y., he called my attention to the small stakes, which supported the raspberry canes. The end in the ground, as well as the part above, was as sound and bright as if lately made, but he informed me that they had been in constant use for twelve years! Said I, "Of course they are cyanized?" "Yes," he replied, "and the process is so simple and cheap, that it deserves to be universally known, and it is simply this: One pound of blue vitriol to twenty quarts of water. Dissolve the vitriol with boiling water, and then add the remainder."

"The end of the stick is then dropped into the solution, and left to stand four or five days; for shingle, three days will answer, and for post, six inches square, ten days. Care is to be taken that the saturation takes place in a metal vessel or keyed box, for the reason that any barrel will be shrunk by the operation so as to leak. Instead of expanding an old cask, as other liquids do, this shrinks them. Chloride of zinc, I am told, will answer the same purpose; but the blue vitriol is, or was formerly, very cheap, viz., three to six cents per pound."

Mr. Fairfield informed me that the French government are pursuing a similar process with every item of timber now used in ship-building, and that they have a way of forcing it into the trees in the forest as soon as cut, ejecting the sap and cyanising it all on the spot. I have not experimented with it, but Mr. Fairfield's success seemed to be complete. "The process is so simple and cheap as to be within the convenience of every farmer, and gardener even, and I therefore thought it so valuable as to warrant a special notice of it.—*R. G. Pardee*."

At a recent meeting of the Farmers' Club, in Hudson, N. Y., one of the members exhibited a post which, previous to being placed in the ground, had been soaked in a solution of blue vitriol—one pound of vitriol being used to twenty quarts of water. The post was pine, and when taken up was as sound as when first put down, eight years since. This solution is good for all kinds of timber exposed to the weather—spouts, shingles, bean poles, grape vine stakes, etc.

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**VINEGAR IN TWENTY-FOUR HOURS.**—The whole philosophy of the manufacture of vinegar, is included in the word *oxydation*: the alcohol contained in cider, beer or wine, combining with the oxygen of the atmosphere, becomes acetic acid, which in a diluted state is vinegar. The methods usually pursued in the domestic manufacture of this article, are, to say the least of them, susceptible of improvement. The

conversion of cider into good vinegar, by exposure to the air in casks, requires weeks and even months to accomplish ; because, only a *small surface* is exposed at one time to the oxydizing action of the atmosphere. By exposing a larger surface of the liquor to the atmosphere, oxydation takes place with corresponding rapidity, and the process may be completed in from twenty-four to forty-eight hours.

The method of accomplishing this rapid acetification, which has long been known to scientific men and manufacturers, may be pursued without difficulty in private houses as follows : Take a clean flour barrel, and bore auger holes all around the sides, and in the bottom ; set it over a flat tub or open cask, and fill it light with beach shavings which have been soaked in vinegar. On the top of this barrel, which is open, lay two strips of wood, and resting on these, a pail filled with cider, beer or the like. Procure twelve or fifteen lengths of cotton wicking, about thirty inches long, which, after dipping in the liquid, arrange around the sides of the pail at regular intervals so that one end of each wick will be hanging in the cider and the other one hanging down outside and below the bottom of the pail. By means of these wicks, the pail will gradually be emptied of its contents, which trickling over the shavings will be exposed to the air, absorb oxygen, and finally be received in the tub beneath. By returning the liquor into the pail above, and suffering this trickling process to be repeated two or three times, a splendid vinegar will be obtained. The whole secret of the process lies in the mechanical increase of surface accomplished by the shavings.—*Scientific American*.

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STEAM ON COMMON ROADS.—In England, where the turnpike roads are well made and kept in good repair, by somewhat heavy rollers, the question of steam carriages for them is becoming of such importance, that a bill is now before the House of Commons, to authorize the commissioners of such roads, to take a toll of twenty-five cents for every steam carriage, and from six to eight cents for every wagon drawn by such steam carriage ; also to compel each steam carriage to consume its own smoke. One which will convey four persons, and then weigh only thirty hundred weight, passengers included, has recently been built. It ran, on a level road, from twelve to fourteen miles an hour, and can ascend a hill whose grade is one to twelve. The passengers sit in front, and the water tanks form the framing of the engine. It has two driving wheels, and a front or steering wheel, and consumes six or seven pounds of coal a mile, the boiler evaporating a gallon of water a minute. The builder is Mr. Thos. Rickett, of Buckinghamshire.—*Scientific American*.

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HARD CEMENT.—The following cement has been used with great success in covering terraces, lining basins, soldering stones, etc., and everywhere resists the filtration of water. It is so hard that it scratches iron. It is formed of ninety-three parts of well burned brick, and seven parts of litharge, made plastic with linseed oil. The brick and litharge are pulverized ; the latter must always be reduced to a very fine powder ; they are mixed together, and enough of linseed oil added. It is then applied in the manner of plaster, the body that is to be covered being previously wet



with a sponge. This precaution is indispensable, otherwise the oil would filter through the body, and prevent the mastic from acquiring the desired degree of hardness. When it is extended over a large surface, it sometimes happens to have flaws in it, which must be filled up with a fresh quantity of the cement. In three or four days it becomes firm.—*Ib.*

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**AYRSHIRE COWS AS MILKERS.**—Speaking of the late Hampden Co. (Mass.) cattle show, the *Springfield Republican* says: "Mr. Birnie's family of Ayrshires attracted much attention; he keeps, also, a large herd of pure Short Horns, and he awards the superiority for milk to the Ayrshires. In proportion to the food they eat, he says no breed can surpass them in yield of milk. He has a young, small cow of eight hundred pounds, that has, since April 1st, given nearly six times her weight in milk, averaging more than her weight per month; and a two-year-old daughter of this cow—baby looking animal, but already in milk—yields up her twenty pounds daily."

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**MILK WITHOUT BUTTER—A REMEDY.**—A French agriculturist mentions cases of cows whose milk, otherwise of good quality, lacked the butter-forming power, even to so great a degree, that if mixed with the milk of several other cows, the product would be very small and of inferior quality. Such, to some extent, we have known to be the case. The writer above mentioned, says that cows usually giving milk rich in butter, sometimes, though well kept, yield inferior milk, and that he has found the following a successful remedy: It consists in giving the animal two ounces of the sulphuret of antimony, with three ounces of coriander seeds, powdered and well mixed. This is to be given as a soft bolus, and followed by a draught composed of half a pint of vinegar, a pint of water, and a handfull of common salt, for three successive mornings, on an empty stomach. A single dose is usually followed by an improvement in butter, gradual but permanent in its results.

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**BEST TIME TO CUT TIMBER FOR FENCING.**—Late autumn is the best time for felling timber for almost any purpose, and it is particularly so when the timber is to be worked up into rails, or stakes, or posts for fencing. At that season of the year the new wood has arrived at its complete maturity, and there is less sap and albumen in timber than there is at any other season of the year, which albumen, when exposed to the influence of the weather, hastens the decay of timber. If timber be cut and split out, in the latter part of autumn, the seasoning process is much more gradual and perfect, because the grain of the timber contracts more equally and uniformly, rendering the timber firmer and less porous, and less cracked, than when cut at many other seasons of the year. Besides, timber that is cut in late autumn, and split out, or sawed out before spring, will not "powder post," nor be injured by the worms working in it, nor be injured by dry rot, as is the case with timber, many times, which has been cut at some other seasons of the year. Fence posts and stakes, particularly,

no matter what the kind of timber may be, when felled and split out in late autumn, willout last other posts and stakes, of the same kind of timber, which may be cut at a different season of the year, by several years, according to the time it may be cut. Reason teaches us that this is so, and the experience of the most successful experiments in timber, furnish the most indubitable testimony to substantiate the fact.—*Scientific American*.

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HEN HOUSES.—A correspondent of the *Germantown Telegraph* gives the following description of his hen house, and mode of caring for the comfort and health of his fowls :

“Two years ago I put up a building of gravel bricks, which, you must know, are composed of a mixture of gravel and lime, and molded into blocks as large as six or eight common bricks, and allowed to dry in the sun for some weeks before being laid. The house is twenty by twelve on the ground, and to the eaves about ten feet high. We divide it into two equal parts, for a smoke-house in one end, and the other for the accomodation of the poultry. Of course, the partition wall is entirely tight. As the roof is of common cedar shingles, it was necessary to plaster overhead to make it fire-proof. The floor is in one piece, of the same cement as the wall.

Thus you have the domicil. Now for its management and its advantages. Once a week, early in the morning, while the dew is yet upon the grass, if the weather be dry, it is thoroughly *burned out*, and purified of all *foul* things. This is done by gathering the litter of the nests and the sweepings from the floor to the latter, on which pile is thrown an armful of dry straw or shavings, with a couple of spoonful of sulphur. The windows are next closed on the inside with sheet-iron coverings. The fire is kindled, the door is shut, and the work of purification is continued for half an hour. Now, when the fire has been extinguished, what remains upon the floor is gathered into a barrel, and shoved to one side, where it is kept dry from the weather, as a valuable fertilizer, till needed for the field or the garden. Thus is collected six or eight barrels per year of this home-made guano, which we think worth more than twice the interest of the cost of the entire building.

The whole expense of both hen and smoke-house was less than one hundred dollars. You will perceive that by upsetting and burning the nests weekly there is no chance for setting hens. You must, therefore, find other quarters for them and the little chickens, which is better for all. In the roost are accommodated about eighty hens and cocks, which are happy and healthy, and which supply us with an abundance of eggs the year round.”

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SMUT IN WHEAT—AN EXPERIMENT.—An experiment is related in the *Rural New-Yorker*, where three plots of ground exactly alike were sown with wheat to test the cause of smut. The first was sown with smut wheat, and (of course) did not grow. The second was sown with bruised wheat, broken in threshing, which some think the cause of smut. A few kernels grew, but produced no smut. The third plot was sowed with good wheat rolled in smut until the kernels were entirely black with it. The product was *one-half* smut wheat.

## Editor's Repository.

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THE most important event transpiring during the past month, pertaining to the agricultural and mechanical interests of the state, was that of the location of the State Agricultural Society's Fair for 1860. The annual meeting for the choice of officers and locating the fair for the ensuing year, was called on the eighteenth of January. A much larger attendance of members characterized the meeting, and a greater interest was manifested in the future success and welfare of the society, than had ever before been exhibited; so that instead of consuming a day or two at most, in endeavoring to advance the interests of the society by securing, in the choice of officers, a proper administration of its affairs for 1860, the meeting—adjourning from time to time—continued with its discussions and counter discussions, resolves and re-resolves for the greater part of four days.

The matter that elicited the most interest and feeling among the members present, was that of the location of the next fair; a small minority desiring to have it at Oakland; a somewhat larger minority voting for San Francisco, whilst an overwhelming majority were in favor of Sacramento. We have ever been of the opinion that the best interests of the society require that it should be located permanently somewhere. The great expense attending its removal, annually, from place to place, and the entire absence of anything like a sufficient and comfortable accommodation for the numbers that throng the fair, at any other place in the state than the two principal cities, San Francisco and Sacramento, would seem to justify a permanent location at one of the two places.

We believe there is no other point in the state where the necessary accommodation can be had for visitors, and where so many can congregate at a less trouble and cost to themselves, or where a pavilion, equal to any other on the continent, can be secured for the purposes of the fair, free of cost to the society, or a place more generally desirable to a large majority of the members of the society for the annual fair, than Sacramento. For this reason we acquiesce in the decision of the majority, though our preference, so far as personal convenience is concerned, would have been San Francisco. The society, with the large amount annually paid into its treasury, ought not to be kept continually bankrupt by the enormous expense incident to an annual migration. We are glad, therefore, to see something like reform inaugurated in the matter of expenditures, which can only be done, in our opinion, by a permanent location of the annual fair at such place as, whilst it affords the necessary accommodations for exhibitors and visitors, provides with a prodigal liberality the finest building and offices ever before proffered to the uses and purposes of an agricultural society by the people of any county, in any country.

The new board of officers and managers; their undoubted ability to conduct the affairs of the society; their determined purpose of economy in all expenditures, are a sufficient guarantee of a successful future, and we predict for the next state fair a success that will require a still after and greater effort to equal. The officers of the society for 1860 are—President, T. G. Phelps, of San Mateo. Vice Presidents, J. J. Warner, Los Angeles; Cary Peebles, Santa Clara; B. Woodward, San Francisco; Caswel Davis, Shaw's Flat; L. B. Harris, Sacramento; Nathan Coombs, Napa



Jas. T. Ryan, Humboldt; P. B. Reading, Cottonwood; Chas. Justice, Johnson's Ranch; Dr. J. S. Curtis, Sacramento; Dr. Wm. Rabe, San Francisco; Wm. Thompson, Millerton; A. T. Laird, Nevada; R. J. Walsh, Monroeville; Dr. E. B. Harris, Ione Valley; Judge Coulter,—; P. De la Guerra, Santa Barbara. Corresponding Secretary, O. C. Wheeler, Sacramento. Recording Secretary, N. A. H. Ball, Sacramento. Treasurer, D. O. Mills, Sacramento. Managers, Wilson Flint, Sacramento; Thos. Ogg Shaw, San Francisco; P. J. Devine, Sacramento.

During the discussion relative to location, the question was mooted as to the constitutionality of its location for two years in succession in the same place. The opinion entertained by the majority present, we find embodied in an article in the *Alta California*, which we appropriate as follows:

EDITORS ALTA:—There appears to be no violation of the Constitution of the State Agricultural Society, in selecting Sacramento for the next fair. The present Constitution was adopted *after* Sacramento was chosen for the fair of 1859, so that this is the first election for the place of the fair, under the new constitution; and Sacramento is equally eligible with all other places.

But the people of Sacramento know that their action in the selection of their city for the second consecutive term of the fair, is against the public sentiment of the agricultural and mechanical people of the state. [Outside of Sacramento and adjoining counties.—ED. CULTURIST.] Mr. Crocker, a merchant of Sacramento, urged this view at the late convention, and, with great eloquence, implored his fellow-townsmen to respect public sentiment, and not endeavor to use the agricultural society of the whole state for the private advantage of Sacramento.

This gentleman advocated San Francisco, on the ground that it was the interest of the society that the next best place should be selected with reference to its means of accommodation and readiness of access. He said, truly, that Oakland is no place for the fair. The delegation which went up from Oakland, admitted that San Francisco would have to be looked to for accommodation if the fair was held at their place. An awkward revelation was made against the claims of Alameda, viz.: that county had but one member in the State Agricultural Society; and, further, had never exhibited any interest in the institution, till now it sends a delegation to claim the use of the society's fair, apparently to make some money for their place, and to do this, every visitor from elsewhere is proposed to be taxed with the time and heavy cost of ferriage.

These very weak claims of Oakland ruled it out, and as San Francisco was not asking for itself the location, the eligibility of Sacramento, as the next best for public accommodation, was urged and carried by a Sacramento vote. Without approving the action of the people in this matter, we may suggest that Sacramento is not without excuse. It provided a fine building for the fair last year; and, contrary to expectation, the agricultural institution came out of the fair, in debt several thousand dollars (\$7,000).

No one will say that the active officers of the institution, mostly of Sacramento, did not work manfully and well, in getting up and conducting the fair, allowing fairly for its being their first experience, in a country so new in its agricultural features as to afford scarcely any available reference to the experience of other states.

On the ground of this debt, which is due to Sacramento capital, and which may be worked out by another fair; and on the further ground of the experience now possessed by the people of Sacramento, to more economically and still more efficiently conduct the next fair; and because no other place proposed makes any show for accommodating the fair, while Sacramento has full conveniences to offer, free of charge—on these united grounds, we say that Sacramento is entitled to some consideration, which may protect her people from too hasty condemnation. ANTHRAX.

OUR FRONTISPIECE.—A lithograph by Kuchel, of the Easter Beurre pear. This is one of the best, as it is the largest of the desert winter pears. Its season of ripening is from March to May in most of the Eastern states where cultivated; in California it begins to mature in February and a few specimens have been kept till the middle of April. Downing says this pear is considered abroad, one of the best winter or late spring pears. It seems to require a rather warmer climate than the Eastern states to arrive at full perfection, and has disappointed the expectation of many

cultivators. In California it bears admirably and the fruit is of exquisite flavor, and a fortune might be made by the culture of this one variety. It is annually imported from France in considerable quantities, and has been sold in New York as high as twelve dollars a dozen; but the more ordinary price there for good specimens is three dollars a dozen. Its flesh is white and very juicy, buttery and melting, when well ripened.

The lithograph we present, is a truthful copy as regards size and form, of the specimen copied from, though larger than the size usually attained by this variety. We regret that we have mislaid the memorandum, by which we are disabled from giving the producer's name. It was one of a half dozen pears of the same variety that took the first premium at the late agricultural fair at San Jose. By a mistake of the binder of our December number, a few copies of that number may be found to contain the *Easter Beurre*; it should have been the *Beurre D'Anjou*.

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RASPBERRIES, CRANBERRIES.—EDITOR CULTURIST.—I should like to be informed, through the medium of the CULTURIST or otherwise, if the raspberry can be propagated in the manner recommended for the blackberry, on page 308 of the January number. The article on the Cranberry Culture (page 299) has suggested to me that much of the abandoned mining ground among the mountains might be successfully used for that purpose. There is a good deal of land in the mines, that has been covered to a great depth with what miners call "tailings." This is sometimes coarse gravel; sometimes fine, light sand; sometimes coarse gravel with large stones, and sometimes a mixture of all three. I have ground covered to a depth of four or five inches, to that of several feet, with washings, consisting of a mixture of tailings, of all grades, from the finest sand to stones as large as a moderately sized fist. If I had something to begin with I should certainly try the experiment, and perhaps others might be influenced to do the same. How is the cranberry propagated? How and when and at what cost shall I get the material to begin with, and what do you think about it? You must excuse me for troubling you, for you know that we are in the habit of regarding you a public oracle on agricultural matters, so far, at least, as your subscribers are concerned.

Truly yours,

COLUMBIA, Jan'y 5th.

JAMES WOODWORTH.

We have never heard of raspberries being propagated from mere sections of roots; it is possible, however, that they may have been by that mode, though the usual method is by offsets from old stocks or plants, having at least a small portion of both root and top. Having received from no less than three other sources, inquiries relative to the culture of the cranberry, we give publicity to a portion of a circular on the cranberry, recently received from Sullivan Bates, Bellingham, Norfolk county, Mass., believing it will be perused with interest by many of our readers. See also advertisement.

"As much as has been said on the subject of the cultivation of the cranberry, and as many communications of inquiry on that subject are daily received by me, I propose giving such information to the public as my experience will permit. There are but very few soils in the United States, but what will successfully grow the Bell cranberry. When the following soils are at hand, it is well to select them:

1. Select a situation for your cranberry field on a clay soil, or on a dark loam soil, or on all soils where there is a mixture of sand, mostly of reclaimed lands, such as can be made moderately dry, are well adapted to grow the cranberry. In fact, most all soil that is natural to grow the potato, is well adapted to grow the cranberry—yet the first mentioned soils would be preferred. As far as I have ascertained, there are three varieties of cranberry, viz: The Barberry, Cherry, and the Bell. I have never known of any other variety of the berry that would naturalize to dry soil, except the Bell cranberry; this species of the berry grows much in the form of an egg; it is inclined to grow in the wild state, on the borders of cranberry bogs, spreading its way to upland soil; this species is much larger than the others in its wild state. Persons engaging in the cultivation of the article, should commence with the last mentioned species; and, by commencing with those that have been

cultivated and naturalized to a dry soil, they will much sooner accomplish their object, with much less trouble and expense, as the plants multiply and increase abundantly.

2. Prepare your soil the same as for sowing grain, by plowing, harrowing and making your soil even; then mark it out in drills, eighteen or twenty inches apart, putting the plants in the drills, five or six inches apart; hoe them slightly at first, till the roots become clinched, and afterwards no other cultivation is needed. The plants may be expected to run together and cover the whole soil in two or three years. The cranberry grown by cultivation usually yields from one hundred and fifty to four hundred bushels per acre; its fruit is two or three times as large as the wild fruit, and of a beautiful flavor; it readily keeps sound from the harvest time of it till the time of harvest again. The fruit is usually gathered in September—it is gathered with wire-teeth rakes, made for the purpose—one man will generally gather from thirty to forty bushels per day, with the aid of a boy to pick up the scattering fruit.

The proper time for fall transplanting is October and November; for spring, from the opening of the same till about the twenty-fifth of May. Persons wishing for plants, are requested to send their orders as early as the first of September for fall transplanting, and during the winter for spring.

*The Cherry Cranberry.*—This species of the cranberry generally grows on wet soils, though they will flourish well when put on higher soil, such as may be plowed in a moderately dry time. Persons having soils varying from wet to moist upland, may successfully grow the Cherry variety. If the meadow is not inclined to be very grassy, the plants may be set out over the meadow in bunches two or three feet apart, say six or eight plants in each bunch. The plants are very poisonous to the grass—if they do not have too much to contend with in the first state—and will soon overpower it. Where the soil is very subject to be heavily burdened with grass it is well to remove the top soil, previous to setting the plants. When soil is so situated that sand or gravel can handily be procured, the soil may be covered with either two or three inches deep, and without any other preparation the plants may be set. The sand or gravel will prevent the growth of the grass, till the plants have made headway sufficient to overpower all grass, etc. that may appear after.

*Bell Plants in Pots.*—The plants can be also furnished growing in pots and boxes, forming a beautiful ornament, as the fruit when protected will remain upon the vines until they again blossom, the blossoms starting each year from the new growth. *To this the attention of the ladies is particularly invited.* The plants can be sent in pots, at any season of the year, to any part of the United States. They will flourish on their passage, and can be transplanted to the open ground in the proper season, at leisure. The exceeding beautiful appearance of this slender vine, standing erect, and clothed in the most luxuriant green, bearing its delicate blossoms, and laden with rich clusters of crimson colored fruit, renders it as an ornament for the window, garden or green-house, entirely unrivalled.

As it is supposed by some few persons at this late date, that the cranberry will not flourish on dry soil, I add the testimony of some of our most respectable citizens.

We, the undersigned, hereby testify that we reside in Bellingham, Mass., near the premises of Mr. Bates. We have been daily witnesses of his great success in cultivating the cranberry on upland soil.

PAUL CHILSON,  
ASA PICKERING,  
JOHN BATES,  
WM. PAINE,

WARREN SANDERS,  
DAVIS CHILSON,  
DARLING HUNTRESS,  
SYLVANUS COLEMAN.

The common American cranberry (*oxycoccus macrocarpus*) is found growing in a wild state in all swampy soils, in the Eastern, Middle and Western states. The first account we have of the cultivation of this fruit, is by the late Sir Joseph Banks, who, in 1813, produced, from a bed eighteen feet square, three and a half Winchester bushels—being at the rate of four hundred and sixty bushels to the acre. Capt. Henry Hall, of Massachusetts, has cultivated this fruit for the last twenty years. His method is to spread on his swampy ground a quantity of sand—this is to kill the grass; but where sand is not at hand, gravel will answer the same purpose. He then digs holes four feet apart each way, and puts in the holes sods of cranberry plants about one foot square.



As this plant naturally grows in a very wet soil, it is generally supposed it will not thrive in a dry soil; but this idea is erroneous. Mr. S. Bates, of Bellingham, Mass., has cultivated the cranberry on a dry soil for several years with the utmost success. His method is to plow the land, spread on a quantity of swamp muck, and after harrowing the soil thoroughly, set out the plants in drills twenty inches apart, hoeing them the first season. After this no cultivation is needed. By both the above methods the plant will cover the ground in three years. From my own knowledge of the cranberry for the last thirty years, should I design commencing the cultivation of this fruit on an extensive scale, I would try it on swampy and dry soils. I would drain the swampy soil, plow it as early as possible in the spring, and set out the plants on the plan of Mr. Bates. To show the rapidity with which cranberry plants increase, I will add this statement from an English work on fruits: An English gentleman had only a few plants; these he cut in small pieces or cuttings, and set them out in a green-house. In the spring he prepared some swampy ground by spading it twelve inches deep. In a bed one hundred and fifty feet long and four feet wide, he set out seventy-five cuttings in one drill through the length of the bed, putting the cuttings two feet apart in the drill, and yet in three years the plants completely covered the ground.

Previous to shipping cranberries, they should be run over a platform slightly inclined. The rotten and bruised fruit will not run off, but stick going down the platform, and are scraped off and thrown away. The perfect fruit is then put into tight barrels, and when headed up filled with water, and in this manner they arrive in Europe in perfect order, and have frequently sold in foreign ports at twenty dollars per barrel. Rakes are now made for the express purpose of gathering cranberries, and although these rakes tear the vines somewhat, yet the crop is not diminished by raking: on the contrary, it has been increased. Some years ago, a gentleman in Massachusetts commenced raking his little patch of one-fourth of an acre. The first year it produced twelve bushels, the next eighteen, the third twenty-five, and so on till his last harvest, when the crop amounted to sixty-five bushels. This increase is easily accounted for by the method of gathering with rakes, the pulling up of a few of the vines loosens the ground, and although not intended, yet in fact the raking acts as a partial cultivation.

The testimony of the New York Farmers' Club to Gen. Chandler, by the Chairman, is most flattering—he declares the opinion that five hundred dollars may be obtained for a full crop of one acre. He adds, "I found Mr. Bates' cranberries excellent and unusually large."

BELLINGHAM, Norfolk County, Mass.

SULLIVAN BATES."

**HOW TO PLANT FRUIT TREE SEEDS.**—In answer to the inquiry of James Woodworth, of Columbia, relative to the best mode of planting seeds of fruit trees, we give our own experience in the matter. We will suppose the seeds to have just arrived from the East—as is the case with the packages we sent you last week—all of them, including apple, pear, quince, cherry and plum, should be placed at once in boxes, with enough garden mold to keep them in contact therewith and no more, and then set the boxes in the garden grounds, that the soil mixed with the seeds may be kept at about the same degree of moisture, and protected from mice or other vermin. If they can be acted upon by frost, all the better, particularly the cherry and plum. A large part of the apple and quince, and a fair proportion of the pear, will doubtless start on the approach of spring, at which time they should be frequently examined, and when they show indications of starting, they should be planted at once in the ground prepared to receive them, whether it be in the orchard or nursery row.

A great error is often committed by allowing the seeds to remain in the boxes till they sprout. A removal and planting out after they have made sprouts of one-half inch in length, is very frequently fatal to their after success. As spring approaches, if the cherry and plum stones do not open, they should be carefully cracked, but planted with the shuck or shell still around the seed; this plan will ensure a large proportion. It often happens, in a climate where there is but little frost, that even the apple, pear and quince do not all vegetate the first year, many of which would, if allowed to remain in the ground another season. It is the practice of some to pour hot, not scald-

ing water, upon apple and pear seeds, to promote their speedy germination, allowing them to remain in a few moments, and then partially drying them again in the sun before planting. This operation has the effect to cause the cuticle or outer covering of the seed to crack, which facilitates the starting of the germ. It may be practiced advantageously, if with proper care. Plant one and a half inches deep, and keep the ground moist, not wet, till they germinate.

**PLANTING FRUIT TREES.**—Mr. Burtis, agent for the sale of Fox's nurseries, gives the following explicit advice to persons about to plant fruit trees :

Prefer the elevated terraces or land rolls to the low grounds, which suffer most from spring frosts. The best soil is that which will keep most loose when cultivated properly.

Windy exposures are more easily protected than is supposed. A hedge of malvas, or of willows, or an open picket fence, or both combined, will secure a fruit crop almost anywhere in the bay winds—peaches perhaps excepted. But in no situation will fruit trees yield surer crops than among the hills of our mining districts. Plant trees as early as possible in this climate.

Buy only of nurseries of undoubted reputation for knowledge of the business. The purchaser should be able to place implicit confidence in the trees being true to their labels. It is an awful vexation, after three years' care and anxiety, to find the trees you bought of Mr. What's-his-name bear only wild apples.

*Directions for planting and cultivating trees.*—Before a tree is set out, let it be put down as indispensable to the full expansion of its roots, and the safety of the tree in years of trial, that the ground be plowed deeply as possible. Let the holes be spaded deep and the ground well pulverized. By a clean cut, lop off all seriously bruised roots, and give every root all the room you can ; do not curl nor crowd them—and leave no hollow space when you fill in around them. The tree should, when settled, stand about the same depth as in the nursery.

Do not be anxious to have your trees look tall ; the process of transplanting destroys so much root, however well done, that there must be a corresponding cutting down of the upper growth. In the next season, the head of the tree will then be much finer and fuller. Do not allow branches to be cut near the ground ; the stem needs their protection to save it from sun-scald. It is a safe rule that the younger the tree you transplant, the more vigorous, more fruitful and more hardy it will prove in the end. Not one advantage is gained by getting large trees of three and four years' growth.

Keep the surface always loose and clear of weeds ; in the month of June—according as the dryness indicates—a mulching of straw and earth over the roots, affords a priceless protection against drought. If you irrigate afterward, pull away the mulching as you water, and return it immediately. When the first rain falls in November, the mulching should be opened.

If you irrigate, do it in July ; and one full watering then is better than three sparingly applied. After the first week of August do not water, except to save a tree that is evidently in danger. Water, like medicine, needs caution against excessive indulgence. It should be used less to force than to protect the tree, and chiefly to carry it through the first year's weakness, till its destroyed roots are restored. But experience alone can give reliable rules for irrigation ; they will vary in different soils and seasons, and with different varieties of trees.

**A CALIFORNIA WORK ON BEES.**—Mr. J. S. Harbison, of Sacramento, one of the earliest importers and most successful managers, and we believe, the most extensive propagator of the honey bee in California, will soon present to the public a new work on the propagation and management of the bee, as adapted to a California climate and the use of his improved patent moveable frame hive, including a description of some of the plants and flowers the best for bee pastures in this state. The long practical experience of Mr. Harbison in bee management, both in the Eastern states and here, eminently qualifies him for the production of a standard work on the subjects he presents. The work will be issued within a few weeks.

**THE CULTURIST—ITS PATRONAGE.**—We have orders from recent subscribers, for over one hundred and thirty of our first volume bound. We have added eighty-six new names, paid subscribers, to our former list during the month of January, 1860. We now number over nineteen hundred. The *CULTURIST* is becoming a household necessity, not only among the valleys, but the foot-hills and mining districts of the state. Thus, at the mining town of Nevada, we have a list of over sixty paying subscribers; at North San Juan, over thirty; and at Grass Valley, over seventy; whilst hardly a mining camp in the state that does not contain its subscribers for the *CULTURIST*; so that as an advertising medium going home to the firesides of winter, and in summer to the shaded porch of the reader's domicile—the miner as well as farmer—to be scanned at leisure in "the old arm chair," the *CULTURIST*, owing to its preservable form, offers superior advantages. These advantages are appreciated, and for which, and the generous support our enterprise is receiving from all quarters, we are grateful.

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**WHAT CHEER HOUSE.—FREE LIBRARY.**—Very many of our patrons are from the mining counties of our state, men proverbial for their reading habits and love of literature, and withal possessing a desire—though miners—to keep pace with the agricultural and mechanical improvements of the age. It is for this reason that so many take the *CULTURIST*, and of the few who do not, it is remarked that, on their visiting San Francisco, they repair at once to the What Cheer House, where they know they can get the perusal of our bound volumes—for they will read them. The proprietor, a Vice President of the California State Agricultural Society, knows this; and so, among something over four hundred volumes of new books just added to his former extensive and well selected library, the *CULTURIST* is a becoming feature. Now we are not speaking thus as an advertisement for the What Cheer House; but of its library and reading-room, where the sojourner in the city, for a day, or week, or year, can find an unequalled opportunity of enjoying a fund of excellent reading, embracing a great variety of standard works, with all the journals and newspapers of the day, we do claim that we can legitimately speak, and recommend the same to the attention of the public and the patrons of the *CULTURIST*.

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**LANGSTROTH'S PATENT BEE HIVE.**—We have often been inquired of relative to the Langstroth patent, not only as to its utility, but the extent of his claims under his patent; and whether the Harbison hive, with its improvements, and all others with moveable frames, were not infringements upon the original patent for moveable frame hives. Never until recently, we believe, has Mr. Langstroth had an agent in California. We now learn the fact, as set forth by advertisement herein, that Mr. Hiram Hamilton, of Santa Clara, is the agent for Mr. Langstroth; and by reference to said advertisement, it can be seen just what is claimed under the Langstroth patent. It will interest many.

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**THE HONEY BEE MANIA.**—Just now there seems to be a perfect mania on the subject of bees. Hardly a steamer arrives from Panama that has not its hundreds of hives of bees, and in all conditions from fair to worthless; but the greater part we are quite sure will prove to be of the latter quality. There is no certainty that such hives will be worth, in two months from this time, more than the value of the honey and comb they may contain. We believe the novice in bee-keeping had better by far, procure good strong stocks of bees, in the moveable frame hives, of some one of our reliable apiarists, even at three times the cost at which a greater part of the recent importations have been disposed of.

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**WHERE ARE THEY ?**—Mrs. A. Dyer, from Buffalo, N. Y., arrived in San Francisco in November last. She wishes to hear some tidings of her two sons, Spencer S. and R. C. Dyer, both of whom were boarding at the Plaza Hotel in San Francisco, as late as July 14th, 1859.



## METEOROLOGICAL TABLE,

For Sacramento, California; being an abstract of Observations made during the month ending December 30th, 1859; Lat. 38°, 34', 41'', N.; Long. 121°, 27', 44'', W. Height of the lower surface of the mercury, 41 feet above the sea at San Francisco. The observations are made three times a day conformably with the hours adopted by the Smithsonian Institution. The indications of the barometer are given corrected for capillary action, and reduced to the temperature of 32° Fahrenheit, but not corrected for its height above the sea level. The rainy days are included under the head of cloudy and foggy, and are also put separately to show the number of days on which rain fell during the month. The force of the wind is estimated and registered in figures from 0 calm to 10 a hurricane.

By THOS. M. LOGAN, M. D.

| DECEMBER, 1859.                     | 7h. A. M. | 2h. P. M. | 9h. P. M. | MONTH.         | AVERAGE OF SEVEN YRS. |
|-------------------------------------|-----------|-----------|-----------|----------------|-----------------------|
| Barometer, Maxima .....             | 30.368    | 30.325    | 30.359    | 30.368 inches. | — 0.012 inch.         |
| “ Minima .....                      | 29.788    | 29.791    | 29.811    | 29.788 “       | — 0.032 “             |
| “ Mean .....                        | 30.186    | 30.152    | 30.164    | 30.167 “       | + 0.039 “             |
| Thermometer, Maxima .....           | 49.00     | 53.00     | 51.00     | 53.00 deg.     | — 2.13 deg.           |
| “ Minima .....                      | 34.00     | 40.00     | 37.00     | 34.00 “        | + 2.70 “              |
| “ Mean .....                        | 39.48     | 47.26     | 43.81     | 43.52 “        | — 1.35 “              |
| Force of Vapor, Maxima .....        | .310      | .334      | .321      | .334 inches.   | .000 inch.            |
| “ Minima .....                      | .116      | .087      | .090      | .087 “         | + .018 “              |
| “ Mean .....                        | .203      | .253      | .234      | .230 “         | + .004 “              |
| Relative Humidity, Maxima .....     | 92.00     | 92.00     | 92.00     | 92.00 per ct.  | — 0.56 p. ct.         |
| “ Minima .....                      | 53.00     | 30.00     | 38.00     | 30.00 “        | 0.00 “                |
| “ Mean .....                        | 82.87     | 77.03     | 81.00     | 80.30 “        | + 1.92 “              |
| Number of Clear Days .....          | 9         | 8         | 14        | 10 1-3 days.   | — 1-3 days.           |
| Number of Cloudy and Foggy Days.    | 22        | 23        | 17        | 20 2-3 “       | + 1-3 “               |
| Number of Rainy Days .....          |           |           |           | 5 “            | — 2-23 “              |
| Quantity of Clouds .....            | 4.8       | 4.4       | 3.1       | 4.1            | — 1.2                 |
| Quantity of Rain and Fog .....      |           |           |           | 1.834 .....    | — 0.871 inch.         |
| 1st Days and 2d, Force of N. Wind.. | 15 1.3    | 14 1.8    | 15 1.2    | 14 2-3 1.4     | + 5 1-3 — 0.2         |
| “ “ E. Wind.                        | 5 1.6     | 4 2.0     | 6 1.5     | 5 1.7          | + 1 1-3 + 0.2         |
| “ “ S. E. Wind.                     | 2 2.0     | 1 2.0     | 3 1.3     | 2 1.8          | + 1-3 + 0.3           |
| “ “ S. Wind.                        | 6 2.7     | 8 1.9     | 7 1.8     | 7 2.1          | + 1 — 0.2             |
| “ “ S. W. Wind.                     | 2 2.0     | 1 4.0     | 0 0.0     | 1 2.0          | — 1 + 0.2             |
| “ “ W. Wind.                        | 0 0.0     | 0 0.0     | 0 0.0     | 0 0.0          | — 2-13 — 1.3          |
| “ “ N. W. Wind.                     | 0 0.0     | 1 2.0     | 0 0.0     | 1-3 0.7        | — 1-3 — 0.1           |
| “ “ “                               | 0 4.0     | 2 3.0     | 0 0.0     | 1 2.3          | — 4 1-3 + 0.3         |

## Thermometrograph.

|                                          | DEG.  |                                                 | DEG.  |
|------------------------------------------|-------|-------------------------------------------------|-------|
| Highest Reading by day on the 10th ..... | 54.00 | Mean of all Highest Readings by day .....       | 47.63 |
| Lowest Reading by night on the 6th ..... | 23.00 | Mean of all lowest readings by night .....      | 34.36 |
| Range of Temperature during month .....  | 26.00 | Mean daily range of Temperature during mo. .... | 13.32 |

REMARKS.—The most note-worthy characteristic of the month is found in the long persistence of cold, foggy weather. January is the usual month for the predominance of the saturating fogs of our winter season; but as occurred last year after the early rains, the earth has become already so thoroughly chilled as to be rendered capable of condensing so much the sooner the vapor borne by the south-east trades from the southern hemisphere. Owing to the shortness of the days, the sun possesses but little power to dissipate these fogs; and hence, during the greater part of the month, and for four entire days, the surface of the earth remained enveloped in their murky shroud. The amount of vapor precipitated in the rain-guage from this source, and which is included in the figures above, under the head of inches of rain and fog, amounts to 0.142 inches.

Although the rains which fell in the early part of the season were amply abundant for agricultural purposes, nevertheless their subsequent diminution confirms the opinion expressed by us in former numbers, that the cultivator of the earth cannot depend, with any certainty, upon them

alone ; but must be prepared to supply their deficiency whenever it occurs, by irrigation ; for which expedient no other country, perhaps, is better adapted, both as regards qualities of soil and climate, as well as facilities of commanding water. From the fact that the winters of 1849-50 and 1852-53 were very wet seasons, popular opinion seems to favor the idea that every third or sixth year are periods of maximum rains. If this be so, the second long cycle of six years is now finished, and we may expect this to be a very wet winter. On this point it would be altogether anti-philosophic in us to express any direct opinion. We have only just entered on the eighth year of our serial observations, and many more years must elapse before generalizations can be readily deduced. A vicenniad, or at least a decade must absolutely be accomplished to impart the least value or importance to any prognostications that may be predicated upon meteorological observations. Anything short of this would amount to charlatany in physics—the most rigorous of the exact sciences. One thing is certain, that California does not offer an exception to the diminution of rain, which has been very general in various parts of the earth during the last five years. The *London Medical Times and Gazette*, in commenting thereon, states the following facts, which we quote as a matter for curious speculation in this connection :

“In all countries, traces of dried up streams are met with ; but within the historical period there are no examples of new rivers coming into existence. The Dnieper at Kiev is drying up ; the redoubted plains of Troy can with difficulty be recognized or traced, because the rivers, mentioned by Homer, whose descriptive topography is not doubted, either cannot be found, or they are now such insignificant streams as to fall below the description of the poet. About the mouths of the Nile the water is becoming shallow ; while there is reason to believe that the volume of its waters has been, within the period of history, sensibly diminished. The Baltic is decreasing ; the Atlantic derives its name from a town that is now eighteen miles from the shore, and was once a flourishing seaport. North America is sensibly draining ; the rivers are slowly wearing away the rocks and occupying a lower bed. America, on the Pacific ocean, is notoriously rising, or the ocean which surrounds it is sinking.”

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FIELD'S PEAR CULTURE.—A correspondent wishes to obtain a reliable work on the culture of dwarf pears, or pears upon the quince stock. We would recommend Field's Pear Culture, as the latest and best work with which we are acquainted. It can be had in this city of Warren & Carpenter, 167 Clay street, together with all the standard agricultural publications of the day. Their advertisement, in our addendum, combines a portion of their excellent stock of books and periodicals.

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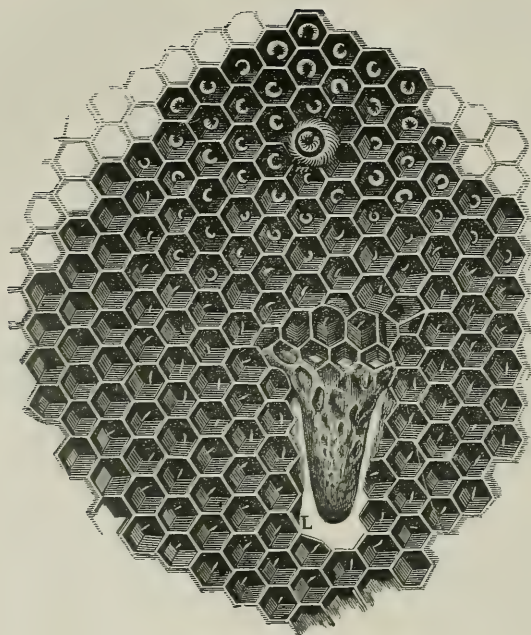
PREMIUMS AT THE ST. JOSEPH, MO., FAIR.—The sons of Malta offered a premium of a tea service, boquet, jack-knife and cane. His Honor M. Jeff. Thompson, Mayor of St. Joseph, secured a jack-knife, as being the ugliest man on the fair grounds ; and Mr. A. K. Miller, editor of the *St. Joseph Journal*, an elegant cane, he being considered the handsomest man present. The boquet to the handsomest unmarried lady, under twenty-five years of age, was awarded to Miss Helvey, of Platte county ; the silver tea service to the handsomest married lady under thirty years of age, having the most children, to Mrs. H. C. Smoke, of St. Joseph.

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OUR NEW ADVERTISERS.—Were it in our power to spare the room, and do justice at the same time to our readers, we would like to devote about one page monthly in calling the attention of our readers to our new advertisements. The fact is, we must either call upon our advertising patrons to occupy less space, or we must so increase the thickness and consequent weight of our magazine, that the postage will be increased from one to two cents on each number. Will our patrons just look over our advertisements and see if they are not really worth the additional cent a month postage, if only to see what there is for sale in the world ?







BROOD COMB AND QUEEN BEE CELL.



SOLID STEEL TOOTH CULTIVATOR.

T H E

# CALIFORNIA CULTURIST.

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MARCH, 1860.

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## A STOCK STARVING STATE.

**H**OWEVER humbling it may be to our state's pride, or to the character of our stock-growers for prudential management, we believe there is not another portion of North America, of equal extent, in which so many animals die annually of starvation as in California. We say it is humbling that a country, whose fame for possessing the most genial climate, and perpetual pastures for the herds of the husbandman, has gone forth world-wide, actually starves to death more cattle in a single winter, than probably any ten of the Atlantic states, even if we include among them those of bleak and frosty New England. For the last five years, during the winter season, the local papers of many of the counties of the great lower valleys, have given their endorsement of the fact, that large numbers of stock were in a starving condition and very many dying.

This winter it was hoped might prove an exception to previous ones, inasmuch as the early and genial rains of last autumn gave promise of a more abundant winter supply of green food than had characterized previous years; but in this we have been disappointed, and now our stock are dying by thousands. The Marysville *Express* says: "We are informed that there is great suffering among the cattle of this and adjoining counties, on account of the unparalleled scarcity of food. Thousands have absolutely perished, and their bodies may be seen scattered over the plains. A gentleman from Butte county informs us that stock men in that county have sustained very heavy losses by their cattle dying. Major John Bidwell has lost about one hundred head. Others have suffered in proportion. It is said that feed is scarcer than it ever was known at this season of the year."

Now, by reference to the record we have named, the local papers of the counties, it is evident that this season is not an exception; but only that, in consequence of the

large increase of stock over former years, there are necessarily larger numbers to die; for the natural pastures of the state, instead of yielding an increased quantity of forage, are annually yielding less and less. There must be something radically wrong in a system of stock husbandry, that shall allow of thousands of animals dying annually by direct starvation. Either there is not sufficient forage grown for the year's supply, or there is a most reckless improvidence on the part of the grower to garner it up for the winter's consumption.

We believe one great error of the stock-grower, productive of so much suffering to the animals and loss to himself, to lie in this: a tacit belief that it is unnecessary to provide for the general stock of the farm, other than the working animals, any winter feed beyond that supplied by the natural pasturage of the country; that because our pastures are green through nearly the whole of winter, cattle can live. There are too many, however, who mistake the nature of their green pastures, and particularly in regard to the quality of the herbage produced. It is well known that the greater part of the product of the dry plains and hill lands available for pasturage, is only weeds; that but few of the great variety produced are ever eaten by cattle, except in nearly a starving condition; that these weeds are always the first to start in the season, clothing the ground in green long before a blade of nutritious grass appears. It is folly to suppose that stock can be sustained much above the starvation point, upon a very short bite of bitter, innutritious weeds, every few days blackened by frost, and this their only feed for months together, through the rainy and coldest season of the year.

The result of the last eight years' management of stock in California; the immense annual loss incident to a constantly recurring scarcity of winter food, ought, before this, to have taught our herdsmen the necessity of providing against the calamity that this winter is more than doubly decimating their herds. It is certainly hopeless to expect, with the condition incident to a more densely populated country than formerly, that California can ever again sustain the immense herds she once has upon her broad plains and oat-clad hilltops. The fencing and surroundings of thousands upon thousands of acres of grain fields, from among the most naturally luxuriant and productive lands of the state, its river alluvium and low valley lands, shuts out from the herdsman the very lands that were the main dependence of the old stock-growers for a successful wintering. On the greater part of such lands the enormous growth of summer, owing to its luxuriance and rankness, was but little consumed by stock in summer—the cattle preferring the short but sweeter pasturage of the hills; but when this was consumed, rather than reach the starvation point of present experience, they would resort with a demanding appetite to the less nutritious but more abundant product of the rich alluviums of our bays and rivers, and with a certainty of finding ample subsistence.

But this condition of things is passed, and yet an attempt is made to sustain the same or even increasing herds upon the product of the hills alone; and nothing will convince our stock-growers of its utter impracticability, but the constantly recurring loss by the winter starvation of their herds. One great evil incident to stock-grow-



ing in many parts of California, and one which operates heavily against the legitimate home farmer and stock-producer, is the mania for stock-growing by a class of men, who, whilst they have the means to engage in the business, so far as the purchase of the necessary stock is concerned, depend entirely upon the trespass they commit upon others' lands for their sustenance. Roving, migrating herds of sheep and cattle, are found in all parts of the state, encroaching upon the domain, and consuming the forage that more legitimately belongs to the resident occupant and oftentimes proprietor. Not unfrequently a fine but perhaps limited district of country, adjacent to the home of the moderate stock-grower among the foot-hills, has been, though without fence, guarded and protected to a great extent of time and trouble, purposely to save its forage for a winter's supply for his own stock, and just as he is about to make it available and remunerative for his time and trouble, the eye of the ever trespassing, roving herdsman discovers it, and what would have served to have carried the stock of its rightful owner safely through the pinching time, is, by the far greater numbers of the trespasser's stock, consumed in a week, and he moves away leaving the resident's stock to starve. This, with a few other conditions of our stock husbandry are quite peculiar to California, and therefore cannot be brought under any rule of practice having precedent as a guide.

The evils, however, incident to our present condition, will eventually regulate themselves. Confirmation of titles to lands will have much to do with restricting the operations of the trespasser. A more extended system of fencing, by which certain tracts can be reserved with their forage exclusively for winter's use, will go far in preventing the recurrence of the annual starvation; whilst the general adoption of more of a mixed husbandry, securing a cultivation of the grasses adapted to the peculiarities of soil and climate, and a production of the cereals, with a consumption of their straws as food for stock, will have a still more favorable effect in mitigating the now annually recurring evil.

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### MOOT-POINTS.

#### PEACH CURL, ACCLIMATION, ADAPTATION, ETC.

EDITOR CULTURIST:—It is assumed that the peach curl is not caused by insects, for the following reasons: First, the curl takes place at an early period of the season, when depredating insects, as ants, curculio, etc. are not yet in existence: secondly, insects would not be confined to peculiar varieties, as the young, tender leaves of the thick leaved kinds would be as exposed to depredations as others: thirdly, insects would not be partial to trees exposed to fog, as protected trees have been observed to be exempt from curl: fourthly, the curl has no respect to color; under Bodega fog, the Snow, Imperial White and Early Ann of the white do not curl; and of the yellow, Crawford's Early, Lemon Cling, Orange Cling and others are exempt. In the Atlantic states the serrated leaved kinds, as the Early York and

Tillotson are subject to mildew; yet here they are not more subject to curl than others, and we know nothing of mildew. I suppose the curl to be analogous to rust in wheat, which is admitted to be caused by disruption of the sap vessels. If the curl be caused by insects, it may be proved by careful microscopic observation, not that insects or animalcules may be seen on the curled leaves, but that they are not also seen on the uncurled.

We should suppose that climatic influences that tend prematurely to ripen our orchard fruits, would also develop thoroughly ripened annual growth; so if trees are not diseased or stunted, which are grown exposed to our fogs, they should be as little affected by removal to a colder climate as those grown in sheltered and warmer positions. Large and luxuriant growth in the nursery, is a reason to expect languid growth for a year or two after transplanting; for large and vigorous growth depends on corresponding extension of roots, which must be or will be mutilated in digging and transplanting to a greater degree injuriously than the less vigorous and extended. Nothing but continued irrigation, under our long, dry summers, can prevent young trees from ripening their annual shoots; and such trees will stand interior or New England cold better than trees of their own raising or under alternating seasons. The effect of any cause that tends to check the annual growth, is to hasten its maturity; light frosts will check and tend to mature the late growth of young peach and other trees, and I can conceive that our fogs may have the same tendency.

Webster defines the spongiolo as "a supposed expansion of minute parts at the termination of radicals, resembling a sponge, for absorbing the nutriment of plants;" so a distinction exists between roots and spongiolos; the place of the latter is at the termination of the roots. Spongiolos might be otherwise called mouths; for by them the tree or plant receives nutriment; they are the point of granulation by which the root is extended or protruded.

C. M.

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The views of our correspondent upon the peach leaf curl, will, we are sure, be perused with interest by all who are devoting their time and much of their best orchard lands to the production of the peach. The curl, by whatever cause produced, is a disease that is rapidly extending, and as rapidly lessening the product of such trees as are subject to its influence. That certain varieties of the peach are exempt from its ravages, would lead us to suppose the disease produce by climatic influences rather than that of microscopic insects. In sections of the Northern and Eastern states, where whole orchards of apple trees are attacked by the canker worm, no distinction is made of varieties; and the same is observable of the elm, which suffers from the same pest equally with the apple; of four or five distinct varieties of that noble tree, all suffer alike. Still, we are not disposed to deny that it may yet prove to be the work of insects, but until the true cause is discovered, we are inclined, from our own observations, to attribute it solely to climatic influences.

We observe our correspondent takes us up on our remark in regard to *spongiolos*, in which we said in effect, that we hardly recognized the term, but believed that roots were roots to their ends. He quotes, in support of the spongiolo theory, the defini-

tion of Webster—"a supposed expansion of minute parts at the termination of radicles resembling a sponge for absorbing the nutriment of plants." We find Webster often very cautious in adopting the opinions of others, upon subjects he was not entirely familiar with; so, in this instance, he says, "a *supposed* expansion, etc." We have very carefully examined a great variety of roots and "rootlets," fiber and "fibrils," under the microscope, but have never yet been able to discover those mouths or "spongioles" that others *suppose* to exist. Upon this subject we find the following in *Gray's Botanical Text Book*, third edition, 1850, p. 81:

"It (the growth of the root) begins by the production of a quantity of new cells (by division) at the extremity of the radicle; *not on its surface, however, but beneath its thin epidermis and the superficial cells.* \* \* \* In this way the root grows onward by continual additions of new material to its advancing extremity; lengthening from the lower end entirely or chiefly, so that this part of a growing root always consists of the most newly formed and vitally active tissue. *The new cells, however, do not occupy the very point, as is commonly, but incorrectly stated. This is capped, as it were, by an obtusely conical mass of older cells,* consisting of the superficial tissue of the end of the radicle, pushed forward by the cell-multiplication that commenced behind it, as already mentioned. As the original cells of this apex wear away or perish, they are replaced by the layer beneath; and so the advancing point of the root consists, as inspection plainly shows, of older and denser tissue than that behind it. The point of every branch of the root is capped in the same way. It follows that the so-called *spongioles or spongelets* of the roots have no existence. Not only are there no such special organs as are commonly spoken of, but absorption evidently does not take place, to any considerable extent, through the older tissue of the point itself.

"As to absorption by roots, the inspection of the root of a germinating plantlet, or of any growing rootlet, even under a low magnifying power, shows that they must imbibe the moisture that bathes them by endosmosis through the whole recently formed surface, and especially by the hair-like prolongations of the exterior layer of cells, or fibrils, as they may be termed, which are copiously borne by all young roots. These capillary tubes, of great tenuity and with extremely delicate walls, immensely increase the surface which the rootlet exposes, and play a more important part in absorption than is generally supposed."

## MINING IMPROVEMENTS.

**T**HERE is no originality with man; his proudest achievements are but elaborations of hints kindly extended to him by nature. In art, science and mechanics, he is alike her entire debtor. Even in the sordid and not abstractly useful and noble pursuit of gold-seeking, she is the sole instructor. The experience of California miners has led them to observe and imitate her, and to assimilate their gold-saving processes more and more closely to hers. At the beginning, the "cradle" and the



"tom" were efforts towards an imitation, which was more nearly attained when the "ground sluice" and "hydraulic" process were subsequently employed. The last mentioned mode tears down and washes off the auriferous earth with all the power and effect of natural forces directed by reason; while the blocks and riffles lining the sluice-boxes, through which the dissolved dirt is conveyed, are only cunning substitutes for the gravel beds of natural water courses. These same gravel beds are now more closely imitated by lining the bottoms with cobble-stones, lapped one over another in regular layers, and inclining down stream. This idea was crudely adopted several years ago, rocks being piled irregularly in the sluices and there allowed to remain for an indefinite time. The plan now is so systematized as to be really valuable. Every section of sluice, or each box fourteen feet long, is regularly paved as above described, the stones held firmly down by nailing strips of board, five and a half inches wide, on each side of the box, and wedging a cross-piece under these strips at the end of each box. As soon as dirt and water have been allowed to flow over this gravel bottom, it becomes immovable, as though set in mortar. The paving can be rapidly accomplished, one man being able to finish in a day twenty-five boxes, fourteen feet long and thirty inches wide, each. The material lies at hand in nearly every mining claim, and costs nothing but the labor of appropriation and selection.

The advantages of rock-sluices may be briefly stated. Those who have had long experience with them assert positively, that they save more gold than any other sluices in use, and a kind of gold which no other sluices save at all. Mr. Welch, of Indian Hill, Sierra county, who has two thousand, three hundred feet of rock sluice leading from his claims, declares that he saves twenty per cent. more gold than he ever did before out of the same dirt. He has thoroughly tested the matter by having alternate sections of rock and block sluice, and invariably obtained most gold from the former. He, as well as others, has observed that the rock-sluices save the most *fine* gold, the almost palpable powder of the precious metal, which is generally lost. For the same reason that more gold is saved, less quicksilver is lost. The rock-sluices also effect a great economy of lumber. All other sluices are lined with blocks of wood, about three inches thick, the cost of which, for each section fourteen feet long and thirty inches wide, is four or five dollars. These blocks have to be frequently renewed, owing to the great friction of rocks, earth and water rushing over them. In some instances they will not outlast twenty days of washing. This was the case in the claims of Mr. Welch, where the saving, effected by discarding blocks, amounts to a very large sum. In his two thousand, three hundred feet of sluice there are say one hundred and sixty-four boxes, that would require new blocks every twenty days; in three hundred days each box would cost, at four dollars for every new lining, sixty dollars; and the expense of the entire sluice for the same period would be \$9,840. In the Kentucky claims, at Sweetland—where may be seen a very handsome specimen of rock-sluice—the saving on blocks for sixteen boxes, at four dollars each, amounts to about sixty-four dollars every forty days that washing is done. Here, then, without reference to the superiority of rock bottoms as a direct

gold-saver, is effected an economy that would alone render many unprofitable claims sources of income to their owners. One more recommendation of rock-sluices is found in the fact that they offer fewer facilities for robbery. Thieves can help themselves in block-sluices by simply scooping up the amalgam as it lies in narrow crevices between the blocks; but here it is buried in sand among stones hard to remove and needing to be washed.

Rock-sluices are constructed upon a grade of from fourteen to sixteen inches for every fourteen feet; the heaviest dirt, or that which flows with least freedom, requiring the most grade. They cannot ordinarily be laid through tunnels, because these have to be run on as light a grade as possible—say one inch to the foot—and block-sluices are used in them as offering the least impediment to the flow of rocks and dirt. Their prime value is to receive the “tailings” at the mouth of tunnels, and convey them for long distances down hill-sides. The boxes are usually thirty inches deep and thirty inches wide, a greater width being obtained sometimes by constructing parallel lengths with a low partition. Flat, oval-shaped rocks, the size of a man’s hand, only thicker, and as hard as possible, are selected for the bottoms. When the miner wishes to clean up, say after washing ten or twenty days, the stones are loosened with a pick, washed off by allowing ten or twenty inches of water to flow through them, and then laid out until the boxes are washed down and cleaned of their golden gatherings. The whole process is simple, economical, and worthy of trial by every miner.—*Hydraulic Press.*

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## EXPLORATION OF THE EASTERN SLOPE.

EAST of the Sierra Nevada lies an extensive, unexplored region, which many of the daring, enterprising and adventurous spirits of California are anxious to examine. It is customary for some people to decry every new enterprise, and wisely shake their heads, expressive of doubt and the idea of superior knowledge or judgment upon questions where certainty cannot be known. Some of the newspapers of California exhibit this trait, in their apprehensions and prophesying that those who go to the Washoe country will find it to be another Fraser River humbug. Although we have formerly said that a different style of mining will be required in Utah from that most practicable in California, we in no wise discourage visits to, and the thorough exploration of that country.

Classifying the Washoe country with Fraser River is very unjust, and exhibits a want of reflection on the part of those who do so. The reports from Fraser River were unsatisfactory in the extreme; their very vagueness lent enchantment, and the fanciful imaginations of the adventurous Californians finished them to suit their desires. The disastrous rush to the gold mines of British Columbia was never justified by the reports from there, even in the exaggerated condition we received them.

Altogether different is our information respecting the Utah mines, and much longer

has it taken since the discovery of that vast wealth to convince the people of the truth of the reports, or to create an interest in the exploration of the country. Early last summer, mines of gold were discovered of exceeding richness, and later in the season it was found that the veins of quartz contained also silver. These discoveries, although reported from time to time, failed to attract much notice, and it was not till after repeated assays at San Francisco that the people believed the reports of the enormous wealth of the Washoe mines.

It is true that but very few veins have been proved to be rich, but these contain such immense wealth that their equals are worth seeking, even though much suffering, loss and disappointment should be the consequence. The opportunity is given for a poor man to transform himself from the condition of a laborer to that of a millionaire by a single discovery, no richer than those already made. Many veins of quartz have been discovered very much resembling those that are most valuable, and upon further exploration will undoubtedly prove of value. Silver is not alone the mineral to be sought; gold is known to exist, and the mines in the vicinity of Mono Lake have paid exceedingly well during the past season, and in other sections good prospects have been obtained.

It is common to say that the discovery of one of the rich silver mines would be of no use to the poor man, as it would require much money to develop it; consequently it would fall into the hands of the capitalist. Hammock and others, all poor men, discovered the rich vein at Virginia City: Hammock sold his interest for twenty thousand dollars; another of these poor men holds his interest, and has been offered forty thousand dollars for it, but refuses to sell. Was not the discovery of benefit to them? Capitalists have done very little towards developing the resources of California, and will probably do little for Washoe. Capital in money is cautious; capital in bone and sinew is bold and adventurous. Gold and silver mines usually furnish the capital that develops them.

There are many things besides mines to attract people to the Utah Basin. There are ranches to be located, hotels to be built, bridges and ferries to be established and many things to make up a settled territory. Through this, without doubt, will shortly be established a daily or tri-weekly overland mail, which will greatly enhance the value of property along the line; here, too, will probably be built a trans-continental railway; then, whoever possesses farms upon the route or its vicinity, will have a lasting and ever increasing fortune. The Eastern Slope now presents the finest opportunity to make a sudden fortune, or acquire a certain one, that has offered since the early days of California gold mining, and probably an equal opportunity will never again offer in the settling of United States territory.—*Placerville Observer*.

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LIME is less important as food for plants than as a chemical agent, acting on the soil, and facilitating those decompositions which liberate the valuable ingredients it contains, and brings them into a state fitted for the use of vegetation.



## DISINFECTING INFLUENCE OF VEGETATION.

WE have before us an exceedingly interesting report on the Medical Topography and Epidemics of California, by Thomas M. Logan, M. D., of Sacramento. We find in it a fund of interesting and valuable information upon climatic influences, the effects of vegetation as well as irrigation upon the salubrity of the Sacramento valley and adjacent country, and the probable future effects of these agencies whenever they shall have become greatly extended. In regard to the disinfecting agency of vegetation, and consequent importance of nearly every species of arboricultural product, but particularly of the vine, and not a few of our coarser agricultural productions, to the health of our homes and the country at large, we quote from pages 31 to 36 of the report, as interesting upon this point.

"Many facts could here be collected, if the limits assigned to this report did not restrict us, to show that certain trees and vegetable productions, growing in damp, swampy, and malarial countries, possess the property of disinfecting them. The Delta of the Mississippi, from the latitude of New Orleans down to the Gulf of Mexico, and west of the city, to its termination on the further side of Bayou Teche, abounds in lakes, and is traversed by a great number of small bayous. Herein are included the fine and flourishing settlements of the La Fourche, the Teche, and the Attakapas, all of which appear to be as little affected with autumnal or yellow fever as the Mississippi coast above the city. Nearly the whole surface of many of these bayous, and a considerable surface of many of these lakes, are covered, in a greater or less degree, with a great number of aquatic plants, both phænogamous as well as cryptogamous; but more especially with a large flowering plant, known by botanists under the name of *Jussieuia grandiflora*, which grows three or four feet above the surface of the water, and gives the fallacious appearance of a natural meadow. To the influence of this plant Dr. Cartwright has ascribed the immunity of the region of the country, where it grows, from fever; and adds, 'I could find no other cause for the remarkable purity of the stagnant water in the lagoons, swamps, lakes, and bayous of lower Louisiana. \* \* \* North of the region where the *Jussieuia grandiflora* flourishes, there is the same kind of alluvial soil, formed by depositions of the identical rivers which form the soil of lower Louisiana; yet stagnant water, in hot weather, becomes exceedingly impure—beyond the limits in which the plant under consideration is found. The soil, therefore, cannot occasion the purity of the water of lower Louisiana, because the same kind of soil, a little further north, has not the same effect. I think it may be fairly inferred, therefore, that the aquatic plant consumes or feeds upon those substances which, in other situations, corrupt and vitiate stagnant waters in a warm climate.'

It is not important to the point in view to know positively whether the healthfulness of the country just considered is due *exclusively* to this plant. The experiments of Lieut. Maury with the sunflower (*Helianthus*) go to show that other plants possess the same disinfectant property in malarial regions. But we allude more especially to the circumstance because of its relation to another fact of the same import

in California. We have seen, in our topographical sketch, that the borders of the draining streams of the Sacramento Valley, especially near their point of exit, are marshy and overgrown with a wide expanse of *tule*. This species of bulrush is very luxuriant, often attaining the height of eight to ten feet, and seldom less than six feet. It literally covers the swampy lands, and particularly all that extensive delta (as may be seen on the accompanying topographical map) formed by the union of the San Joaquin and Sacramento rivers, before finding their way into Suisun Bay, at a break in the coast range. So far as our information extends, these *tulare*, or marshy lands, are exempt from malarial diseases.

A remarkable fact, and especially worthy of insertion in this place, is one recorded in Sullivan's visit to Ceylon. 'A large fresh-water lagoon, of a most green, slimy, tropical appearance, producing in abundance a lotus of almost *Victoria Regia* magnificence, stretches away to the back of the fort, and around are situated the bungalows of many of the Colombo merchants. The propinquity of this lake, would, in any other tropical country, be considered as insuring a considerable amount of fever to the neighborhood; in fact, I doubt whether any advantage would induce a West Indian to locate in such a position.

'However, in the matter of climate, Ceylon stands *per se*, and offers a total antithesis, as regards the healthiness of certain districts, to most other tropical countries. Whilst the vicinity of tanks and lagoons of the most fetid and aguish character is perfectly healthy, that of rivers is equally deadly. The apparent contradiction of the usual laws of nature is accounted for by two reasons. The tanks are covered with various kinds of aquatic plants, which, by a kind providence, are made to serve not only as filterers and purifiers of the water itself, but even as consumers of a considerable portion of the noxious exhalations that would otherwise poison the neighborhood. The banks of the river, on the contrary, are rife with fever; the cause assigned is, that during the rainy seasons, they swell to a great size, and collect the vegetable matter of a large extent of country; but, owing to the rapidity with which they fall at the commencement of the dry season, and the winding and intricate nature of their course, the streams are unable to clear themselves, and this accumulation is left to decay in its bed and infest the surrounding country. There exists also another reason; the beds of the Ceylon rivers are almost invariably composed of sand, and the stream, instead of sweeping the decomposed vegetable matter it holds in its waters, as must be the case in hard-bedded rivers, percolates through the sand, leaving the poisonous matters on the surface exposed to the burning rays of the tropical sun. As correlative, and calculated likewise to establish the protective power of trees also against malaria, we would mention in this connection another fact that once came within our own personal observation. Some twenty years ago, the streets of Charleston, S. C., were characterized by a very general growth of old umbrageous *Pride of India* trees (*Melia Azedarach*) whose cleanly verdure, free from, because poisonous to, insects, was as refreshing to the sight as the shade was grateful to the feelings during the almost tropical heat of the summer months. But with the influx of northern merchants and yankee enterprise came also the spirit of innovation, and this

beautiful feature of one of our oldest southern cities was doomed to eradication by an ordinance of the City Fathers.

The very first autumn after the extermination of the shade-trees, the city, which had for many years enjoyed a perfect immunity from yellow fever, was afflicted with one of the most severe epidemics, and has been more or less subject ever since to an occasional return of the disease.

A distinguished natural philosopher, Changeux, inferred from the results of his experiments, that the action of trees, and living vegetation, in the production of the effect under consideration, is twofold. 'Plants,' he says, 'whether odoriferous or inodoriferous, give issue to emanations, which, when mixed with poisonous vapors, exhaling from marshy or damp soils, neutralize their pernicious influence. But the former exercise a greater effect through means of the neutralizing process than by the power of absorption just mentioned; their emanations mixing with the air we breathe, and correcting its deleterious properties by virtue of the particular qualities with which they are endowed. The second class, the inodoriferous, on the other hand, act more evidently through means of their power of absorption than of the neutralizing property of their emanations, and remove from the air the vapors by which it is contaminated.'

Senebier, in his *Physiologie Végétale*, and other expert observers, ascribe the disinfection, not to the absorption by trees and other vegetable productions of the gaseous poison floating in the atmosphere of malarial localities, but to the purification of such an atmosphere through means of the large supply of oxygen obtained from living plants, and the neutralizing agency of that gas on the mephitic particles it meets with in insalubrious places. As to the manner in which the oxygen thus produced destroys or prevents the elaboration of the malarial poison, La Roche, whose opportunities for such investigations appear to have been ample, says some difference of opinion exists. The most recent writer on this subject, accessible to us, is M. Carriere, who, in his excellent, *Le Climat de l'Italie sous le Rapport Hygienique et Médical*, adopts, it seems, the views of Chevreul and Fontaine, in relation to the formation of the febrile poison through means of the action of organic matter on the sulphates contained in the earth, or in water with the aid of the oxygen derived from the former. According to Carriere, the leaves of plants and of trees, as well as the green substances that cover the soil, are all inexhaustible sources of oxygen, which is so important to sustain life and preserve health. This fluid, thus furnished, offers an obstacle to the action of organic matter. If the latter acts chemically on the sulphates, the other, in its turn, reacts on those compounds, and from the double antagonistic action thus produced, a state of equilibrium advantageous to the purity of the air, and the salubrity is re-established. Hence, to cover the fields, the borders of marshes, indeed, the whole extent of the soil, with an abundant vegetation, is to place on the surface of insalubrious regions a reparative apparatus of the greatest power.

But whatever may be the way in which trees and other living vegetable productions operate in counteracting or neutralizing toxical agents, floating in the air, it is a



generally conceded fact, that they do exercise a powerful influence in promoting the salubrity of malarial localities, and hence their plantation becomes an important part of agricultural economy. In urging, therefore, attention to their general cultivation, we cannot do better than condense the following remarks in relation thereto, from the work of M. Carriere, just quoted, which are as applicable to California as to Italy:

‘Dry soils should be covered with those trees which resist the wind, and grow on the sides of mountains, as the oak and all its varieties. The willow, laurel, etc., will suit best the humid parts of the plains. The culture of the pine, which contributes so much to the decoration of the peninsular landscape, as well as of all evergreen trees, deserves much more attention than it receives. But this, as it were, aerial vegetation does not alone suffice. There is another species of vegetation which must not be forgotten because it creeps over the soil and mixes with the waters. It is necessary that the means for the production of oxygen should be spread wherever this can act, down even in the lowest places, wherever chemical elaboration is at work. The cereals cover the whole extent of the meadows, (*maremmes*) especially in the Roman states; but the harvest leaves the earth exposed, during the hot season, to the solar rays. It is unnecessary to observe that this condition favors the development of miasmata, and gives power to epidemics—for it is well known that the fevers of autumn are the most grave. Hence it is apparent that some other culture than that of the cereals would be more favorable to salubrity. If the vine, for example, was spread over the plains, as is practiced in the south of France, the soil would be protected until late in the autumn; for the vine preserves its leaves until after the maturation of the grapes. In cultivating it for this object, a predominance must be given to the green expansion, or, in other words, to the productive apparatus of oxygen. In Italy, especially in the environs of Naples, this end is obtained by marrying, as it were, the vine to the willow, to the young elms, or to other kinds of trees, and thus prolonging the stems or main stalks (*les ceps*) by the multiplication of their points of support.

Besides these means, and in order the more effectually to subserve the cause of health, it would be advantageous to spread the sedge (*carex*) and other allied plants on the margins and in the beds even of the watercourses and canals, as well as on the dry land. Plants of this genus, it is well known, succeed everywhere in adapting themselves to places which present the most opposite conditions. By these means a product of oxygen would be gained, and stagnant water and currents, with boggy margins, which stand so much in need of this gas, would not degenerate under the influence of the chemical decomposition of which they are the seat.’”

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**STABLING Cows.**—Different experiments show that stabling milch cows during an average of northern winters, increases their milk about *one-third*. In very severe weather the milk will be doubled; while in mild days less advantage results.

“MY WIFE'S HEN SPECULATION.”

ONE morning, as “my wife” was reading the grocery-man’s bill, she exclaimed in a most surprised tone: “Six dozen of eggs in one week, at thirty cents a dozen!”—she drew a very long breath at this point, and I followed suit—“comes to one dollar and eighty cents a week!” “Exactly,” I replied, rather sharp and prompt. “I’d like to know what we are coming to?” inquired my ‘better half.’

“That’s my sentiments,” I remarked, in a low tone, and raising my voice and speaking to a younger S—th, who was eating breakfast with me: “John, see what y’er coming to when y’er get married!” He smiled, I tried to, but it was very hard work.

“I don’t believe,” resumed my wife, “but what that grocery-man tucks on a cent or two, just because he knows *you* (that’s me, thought I) won’t say a word. I don’t see why *eggs* should be so high!” There was a dead calm for two minutes—my eyes were resting upon the last boiled egg on the table in profound meditation. Just as I was about to remark that we had better get along with less eggs, I caught a glance of my wife’s eyes, and concluded that it would be well to let her do the talking. “I don’t see why,” she again resumed, “that it should cost so much to live? We ought to raise all the eggs we want to use, ourselves.”

“Good business,” I said, “that of *raising* eggs.” My wife continued:

“There’s Mrs. G—, she haves all the eggs she wants and some to sell. She keeps hens, and her back yard is no bigger than ours. Now, lets we keep hens, we can save a dollar a week.” John smiled, my wife smiled, I smiled, in fact, the whole family—even down to the youngest S—th, smiled.

“Good!” said I.

At this point my wife enlarged upon the merits of Chittagongs, Shanghais, Burham Pootras, Chinas, Dunghills, and a host of other different kinds of hens. This subject was the only one which was discussed at our meals for the next week. She bought all the different books relative to raising hens she could find in the book stores, and on the seventh day, the entire family had an attack of the “Hen Fever.” Even the youngest S—th’s attack was so severe that he rolled out of the cradle in attempting to clap his hands and crow.

The building of a hen-coop was decided upon. My wife was the architect. It was built after an original design, and resembled a patent sausage stuffer as much as a hen-coop. Her next proceeding was to send me to Rocky Hill, among her agricultural acquaintances, after a peculiar breed of hens—they were duly purchased and installed in our coop. So far, all right and successful. That night there was a procession of hens and chickens, headed by a dozen gigantic roosters, that reached the entire length of Main street. They, of course, paid a visit to my wife—and, of course, I made a speech—and they responded by such a tremendous crowing and cackling that it sounded as if Bedlam had broke loose. As each pullet passed my door, she made a most graceful courtsey and dropped an egg—the ground was covered, and looked as if there had been a snow storm of eggs. I filled the buttery,

cellar, garret, closets, and every possible nook and corner with eggs, and as I was about to put a two bushel basket full of them in the parlor under the piano, I stumbled and upset the entire lot upon that instrument, breaking every single egg—the yellow liquid run down through the keys of the piano, thence on to the nice Brussels carpet, all over my wife's dresses and furs—which had been brought out of the closet to make more room for eggs. That moment was one of great despair—clenching both hands into my hair, I screamed out one of the wildest and loudest shrieks that mortal ears ever heard.

"Goodness!" shrieked my wife, jumping out of bed and landing in the middle of the room, "are you crazy?"

"No, guess not," said I, waking up and collecting my scattered senses, "only an attack of the hen fever."

Since that memorable night, six mortal weeks have passed, during which time, I have watched, fed and taken the best care of those "Rocky Hill chickens," and instead of saving a dollar a week, they have increased my expenses. Like certain bank stocks—I have given up all hopes of a dividend. I had looked regularly every day into that hen-coop only to be disappointed—not a single egg had they seen fit to lay. As the holidays were coming, I suggested to my wife, as the old rooster seemed to be an almost "useless" member of the coop, the propriety of ringing his neck. "Mr. S—th," said she, "I want you to know that that rooster *belongs* to me and I intend to keep *him* whether the hens lay or not!" For the first time in my life, the green-eyed monster took possession of my breast. I vowed eternal vengeance upon that old rooster—just think of it, for a moment, my wife snubbing my nose on account of an old Shanghai rooster. "You can't expect them to lay this cold weather," said she, breaking the silence, "it is so cold. If they had a dose of red pepper, it might do them good!"

"Yes," said I, "red pepper might do them some good." Now's a good time to give that old rooster fits. Red pepper, thought I to myself. So I prepared a dose of red pepper for them, looking out to give my wife's old rooster a double dose. You can little imagine, Mr. T., with what infinite satisfaction and delight I watched the progress of affairs in that coop. The next day I actually found an egg in the coop; I marked it number one, carried it into the house and requested my wife to save it till she got a dozen. I gave my wife's rooster another dose of red pepper. The next day I found the second egg in the coop, and was about to mark number two on one end, when I discovered figure one—the very mark I had made the day before. I also noticed that the nest did not look much like a hen's nest. I remarked the same to my wife; she thought it was owing to the red pepper; I thought so too, and asked her to fetch the eggs in, after that time, and save me the trouble. The next day, egg number one was in the box; I wrote upon it, "*laid by Mrs. S—th Dec. 21st, 1858.*" The next morning I found that that egg had been taken away also that four out of seven hens were dead as a brick. For the first time in my life I was satisfied that my wife's speculation was a failure—that she was a woman not to be trifled with. Whether the death of those "Rocky Hill chickens" was caused



by the cold weather, or over doses of red pepper, or any "other cause" I am unable to state; but I never mentioned any suspicions to my wife.

The next day, a military friend called upon me, from Willimantic. (I forgot to state that I'm a military man.) I showed him the city. Said he, to me, "S—th, you've got a new hat." I said "Yes. Come over to the Clinton house." We went there, and our "labors" commenced and continued for an hour. My military friend invited me to the States, and again we renewed our labors. I then invited him to the Allyn house. There our labors became so great, our "hardships" so severe and other circumstances so numerous came upon us, that we came to the conclusion that we needed rest. He took possession of a lounge and rolled off on the floor—I followed suit. The next thing I remember, was my military friend whispering, informing me that he was going home on the first train.

"Come, S—th," said he, "you're a good fellow"—"I wish my wife thought so," said I, interrupting him.

I saw my friend safely aboard the cars, and had some difficulty in getting home—though nothing to speak of—excepting the side-walks, they were rather slippery; there were, also, several individuals who tried to see how near they could come to me and not run into me—I believed one or two inexperienced gentlemen run into me. I excused them, and all went well till I arrived home. As I was going into the gate, I concluded I would see if I couldn't find my wife an egg; and as I came within a few yards of the coop, my wife's old Shanghai rooster crowed out in the most insulting tone, "We-don't-belong-to-you!" Fired with indignation, I seized a clothes pole and made a furious charge upon the coop, determined to run the coop, rooster and all, through and through; but I stepped on a rolling stone and landed sprawling upon the ground; and, to make the scene more interesting, the wind carried my hat under the fence into Mrs. Bibbins's yard. There's not a family in the whole city that I dislike as much as the Bibbinses—there are seven of 'em all told, girls—but this time there were fourteen, all laughing and giggling to see me attempt to climb their picket fence. My boots were so heavy that when I got one leg up the other would pull me back. I was bound to have my hat, and was about to pull off my coat and boots and show the Bibbinses what I could do, when I heard a voice: "S—th, do for heaven's sake come into the house, you'll disgrace the whole family!" That's from my wife, thought I. Out of respect for my relatives, I postponed my feat of climbing Mrs. Bibbins's picket fence.

Since that day I have become a different man, and through the influence of my wife agreed to become a member of the "Totally Benevolent Moral Reform and Social Teetotal Abstinence Association," on condition that my wife would sell her "Rocky Hill chickens," devote the proceeds to the society, and get me elected treasurer of the association.

As there is nothing to carry to the credit of the hen account, you will notice the total expenses which have occurred—the result of my wife trying to raise eggs and save a dollar a week on the grocery-man's bill.

I append the following as the result of my wife's hen speculation.

| <i>Hens.</i>                                                                                                                              | <i>Dr.</i> |
|-------------------------------------------------------------------------------------------------------------------------------------------|------------|
| To 7 Hens, @ 38c per head .....                                                                                                           | \$2 66     |
| 1 Shanghai Rooster (full blood) .....                                                                                                     | 75         |
| Coop, lumber, cost of making .....                                                                                                        | 5 75       |
| Lost time, hire of team, etc. ....                                                                                                        | 4 50       |
| 2 bushels of corn, @ 80c per bushel .....                                                                                                 | 1 60       |
| Miscellaneous items of feed .....                                                                                                         | 88         |
| Red pepper (to make 'em lay) .....                                                                                                        | 5          |
| Medicines, etc. (for myself, during my "hardships" with military friend, lost time, etc., the result of an attack of the hen fever) ..... | 13 66      |
| New hat, lost .....                                                                                                                       | 4 50       |
| Total expenses .....                                                                                                                      | \$34 35    |

*Inventory of the coop and contents, January 1, 1859.*

|                                                         |    |
|---------------------------------------------------------|----|
| Value of the coop .....                                 | 99 |
| Decrease of value of 3 hens in coop, 25c per head ..... | 39 |
| Decrease of value of 1 rooster (not worth a cent) ..... | 00 |

Total value of my wife's hen property .....

\$1 38

I am permanently yours,

—S—TH,

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ROSES.—If we would make our homes attractive, let us cultivate flowers. In no country does the same amount of care yield so generous a display of flowers as in California. The rose is queen of flowers; its varieties are beyond computation of numbers. If you cherish a love of roses you will have, for every leisure moment, occupation that will never tire. Your hands, your head—aye, your heart will be ever busy and ever refreshed. To make the finest display and the richest effect, the graft is superior to the bud. The budding plan answers for nurseries; but, in December, cut off the stem of a rose bush, at whatever height, and put in one or more wedge grafts, and you will have, in the following summer, a fine, bushy and symmetrical head of grouping flowers. If your stem has sufficient diameter, wedge in two or more grafts of differently colored roses, and the heightened effect is, beyond comparison, more attractive than when the flowers are all of one color.

Budding has this objection, viz: In its first growth, it is easily torn away by high winds, by the brush of crinoline and by every accidental contact; then it is a one-sided excrescence, marked by the disfigurement of a wound coarsely healed. After you have produced a fine symmetrical bush, with richly flowering clusters crowning the head, budding may be done, to give increased variety of colors, year by year; so that ever as your friends pass by, they will see new beauties and novel attractions. Whoso cultivates flowers nourishes the affections; who loves communion with roses and dresses her garden with fondling care has a heart, be sure, that is worth winning. When youth goes forth meaning matrimony, let it mark where cared-for flowers bloom; there let the young man enter, and he will find a heart worthy of his affections.

LADY B.

MALVA GROVE, San Francisco.



IMPROVED BREEDS OF CATTLE—NORTH DEVONS.

FROM that excellent and reliable agricultural journal, the *Farmer and Planter*, published at Columbia, S. C., we extract the following in relation to the value of the Devon breed of cattle as compared with other of our improved breeds, for a southern climate; believing that, if adapted to the climate and herbage of South Carolina, they cannot but prove one of the very best for many districts of California, as much of our natural summer herbage is quite similar in habit of growth and general characteristics. That the Devon is perfectly at home on the short, but close, compact herbage of the New England states, has been long since demonstrated; and now, if experience shall prove their adaptation to the scattered and mostly annual, but highly nutritious grasses of our foot-hills, the Devon cattle are bound to rank second to none amongst us for general usefulness.

"So many excellent breeds of cattle now obtain amongst us, that we find it a difficult task to divest our pen of partialities, excited by the attractive features of each. In furnishing a series, from time to time, upon the neat cattle of the country, we will have much to say relative to the qualities of every breed. We have selected the North Devons for the present paper, because we have now had ten years' experience with them, and find them admirably adapted to an improving system of agriculture. The middle-horned cattle of North Devonshire are, by British writers, claimed to be the direct and unalloyed descendants of the aboriginal cattle of Great Britain. They now exist in the greatest purity in the district extending from the river Taw west-

ward, along the seaboard of the British channel, to a point east of Parrett, and landward by Barnstable, South Molton, Chumbeigh and Tiverton, to Wellington. They are esteemed in their native districts, in Norfolk and other parts of the kingdom, for the richness and volume of butter yielded by their milk. They are favorites in other parts for draught; they have been tried in some districts for the improving of other breeds with eminent success. They have yellowish-white horns, a pure, rich, red color, good symmetry and points. The color of the skin should be a waxey-yellow, the eye bright, clear and prominent, with a circle of variable dark orange around it; the cheek should be small, and the muzzle fine; the nose should be clear yellow. A black, or black-streaked muzzle, is an infallible index of impure breeding. A strict scrutiny at this point will settle many vexed questions of pure and impure breeding, in the North Devon, at a single glance. In America, the dark, rich, red color is the most popular. The very best cows for *handling and milk*, that we have owned, were the lightest, or pale red color. On this point, Mr. J. Tanner Davy, of South Molton, England, writes: 'Many of the best Devons I ever saw, were of a light color. * * * The best course to follow is the *via media*—to get our cattle of a middle color—neither too dark or too light; we then combine the good elements of both. As to *white about the udder*, I cannot account for it; and having been told by my father (who has bred Devons for fifty years) and others, that it cannot be accounted for, and knowing some of the best and purest Devons that have ever been bred by all the breeders in the kingdom, have had white about the udder, I should not refuse a *good* animal on that account alone; but the white must be confined to that part alone.' A thorough bred Devon is born with a pure red tail, which usually grows pure white by the time it is six months old. However, many of the best animals always retain a mixture of red hairs in the bush. The assumptions of ignorant judges frequently do injustice to very fine bred animals, from not knowing these facts respecting the color of the North Devons.

But to return to our cattle—the hardy, beautiful, symmetrical, useful North Devons, and their claims to the attention of our agriculturists. They are, to our notion, better adapted to the improvement of our stock of neat cattle, than any of the English or European breeds. They are an original breed, and, without cross or admixture of blood, they have sustained an improving superiority amongst the best breeders, wherever they have been introduced and bred with care. The least admixture of Devon blood shows its mark, and it is so indelible that it can never be obliterated—the rich red color and distinguishing peculiarities of form and carriage always prevailing. There has been greater improvement effected by the use of the Devon cross, than by all other breeds introduced. The beautiful red, now styled "*Native Cattle*," of New England, are nothing but Devon grades. To those who sometimes assert that Devons are not good milkers, we point to those cattle, the best for all purposes in the world.

The Coke Devons, so long and successfully bred by Mr. George Patterson, of Maryland, compare with any breed of cattle in the world for the abundance and fine quality of the milk and butter they yield. Beautiful in appearance, magnificent in

their milking developments, they are admired and sought after, wherever they are bred. Mr. Patterson has been breeding forty years, with a view to improve and develop this desirable quality. He has succeeded most admirably, and to-day could present a herd of milkers which would astonish the English breeders. We had rather own a Patterson Devon as a milk cow than a cow of any other breed—for we have both usefulness and beauty combined. When these essentials to utility, taste, and fancy are perfect, we want nothing more in a cow. We have found the pure Devons and their grades admirably adapted to the short and precarious grazing of the South. The milking Devons present the most attractive animals for gentlemen who only keep a cow or two in cities, towns and villages. Where they are confined to stables, and liberally fed on grain, they yield good returns of milk and butter. The use of a thorough bred Devon bull will improve any herd of indifferent cattle in a short time, and the continued recurrence to animals of pure blood with good food, will soon wipe out the defects which careless breeding and illiberal keeping have detailed on so many of the herds of the South. We may be over-partial, but when we have good fair milking qualities, symmetry of form, beauty of color, thrift and hardihood of constitution, to back our fancies, we feel safe, and write down the North Devons as the best breed for the improvement of the degenerate herds around us. We have many herds springing up in the South, bred with the utmost care with reference to the best points of this breed, and with a view to their adaptation to our wants. Amongst these are the herds of Mr. Peters, of Georgia, and Mr. William Summer, of Pomaria, S. C. The chance of obtaining *native bred and acclimated animals*, from such reliable sources, should not be under-estimated, when the fatality usually attending the acclimation of imported cattle is considered.*

EVERY MAN HIS OWN NURSERYMAN.

FROM all parts of the state we are constantly in the receipt of money to be invested in fruit tree seeds, and nearly all who send their orders express their determination to engage, to a greater or less extent, in the nursery business; or, at least, the raising of more trees than they will probably want for their own use. Of the feasibility of the project, in very many instances, we have not the least doubt, so far as the raising of trees is concerned; but there are many objections to such an enterprise, or rather to such a great multiplicity of little enterprises, a few of which we propose to discuss.

We believe that almost any business can be conducted upon a liberal scale to better profit than where the same amount of business is performed by many distinct concerns. Means and appliances can be procured for the preparation, culture and management of extended nursery grounds, that could hardly be afforded by the small operator. Efforts can be made to secure at the earliest possible moment any and all new fruits that may, from month to month or from year to year, be brought to notice

that could not be made by the small operator, except at a vastly disproportionate cost. A large nursery establishment will pay for constant, unremitted attention—a very small one cannot.

In large nurseries, men who perfectly understand their profession can be employed at corresponding wages, and such as the smaller nurseryman cannot secure, because they cannot afford to pay them. The nurseryman who makes it his leading business can certainly arrive at a greater proficiency than one who only occasionally gives it his attention. As a general thing, we should be inclined to think that greater accuracy would obtain in an establishment to which the proprietor gave his unremitted attention, than in one that only occasionally commanded it. There is hardly a legitimate nurseryman in the state, that has not already his bearing trees from which he can, with the greatest possible accuracy, obtain his scions for propagation. This the new beginner, in most instances, is deprived of; and, therefore, must trust to the honesty of others for the varieties he may wish to propagate. The one has a reputation established; the other has to make it; of which, we ask, would the orchardist be likely to secure his stock of orchard trees?

We are inclined to look upon the nursery business as a kind of profession, quite distinct from the common operations of farming, or the culture of orchards after they, with their desired varieties of fruits, shall have been set in their place as an appendage to the farm. The culture of the Chinese sugar cane is rapidly extending throughout many of the Western states, and, although any farmer has it in his power to become his own sirup-maker, it is found far more profitable to let this part of the effort, to render available the growth of the farm, go into certain hands that can bestow a better care, and produce a better article, because more experienced in its manufacture. Thus, single establishments are going up all over the states of the north-west, for the reduction of the sirup of the cane of large districts around them, because they can do it cheaper and better. So with the large nurseryman in the first growth and culture of nursery trees: the proper culture and management can only be attained in our varied soils and climates by years of experience. This being the fact, the new beginner, in a new locality, though he may finally succeed, does it at a risk that is not attendant upon the culture of trees in localities in which all the vicissitudes, changes, and effects of climate and soil have been studied and noted. We believe, to a very great extent, in a division of labor; and we should be inclined to risk more upon any article, the product of that division, than if otherwise—embracing every implement used in the cultivation of the farm or nursery, to that of the nursery tree itself.

A RECIPE.—Whenever you get a black eye by a fall on the ice, or by running against a bed-post, or stopping a powerful fist, apply a cloth rung out of very warm water, and renew it until the pain ceases. The moisture and heat liquifies the blood and sends it back to its proper channel. Use warm water or hot, but never cold water to the bruise. A doctor would charge a dollar for this advice, but we give it gratis.—*Water Cure Monthly.*

MORGAN HORSES AT THE FAIR AT ST. LOUIS.

THE public have been apprised through the press that an association of gentlemen in St. Louis, Mo., have established an annual fair at that place, and offered very liberal premiums on horses, cattle, sheep, swine and poultry, all kinds of farm products, agricultural and mechanical implements, from a steam engine to a handsaw, and a countless number of fancy articles. All the states, the Canadas, and "the rest of mankind" are allowed to compete, making it, in my opinion, the most liberal, as it is the most extensive fair on the continent. The fair this fall was the fourth of the association, and eclipsed in numbers and grandeur all the preceding ones—some \$23,000 being offered for premiums. Not far from \$40,000 were taken during the six days of its continuance—nearly \$10,000 being obtained from refreshment stands, under the amphitheater.

The grounds are situated about three miles from the city, in a beautiful grove of fifty acres, for which \$50,000 were paid at the commencement—now it is valued at \$150,000. The association has expended more than \$50,000 in beautifying the grounds, and every year new and permanent buildings are erected, adding comfort and pleasure for the many thousands who attend this wonderful exhibition. Great credit is due the Hon. Richard Barrett, of St. Louis, their President, for his untiring zeal and devotion to the interests of the association. Many deserved compliments were paid him for his gentlemanly deportment to all classes. Messrs. Hunt, Todd and others, also gave their undivided attention to the interests of the fair, and sustained the efforts of the President in his herculean endeavors to make the occasion interesting and profitable to all.

But we commenced this article with the intention of saying something about our Morgan horses, which formed, indeed, the most interesting feature of the fair. It was a brilliant sight to see about fifty roadster stallions enter the amphitheater together to contend for the one thousand dollar prize. Each driver was required to dress in jockey style, and much pains had been taken to make the horses, harnesses and vehicles shine in superb order; and they did shine! I think I am warranted in saying that there never were fifty so fine looking horses brought together to contend for a premium, as these same fifty at St. Louis; and, best of all, forty out of the number had their origin in good old Vermont, or were from horses raised in our state.

This most liberal premium of one thousand dollars was given for the best roadster stallion, size, style, action and speed being taken into the account. Six of the best were retained in the amphitheater, from which to select the premium horse—all others being turned out. These six were all sired by old Black Hawk save one, and he was got by his son, the Myrick Horse, or Sherman Black Hawk. This horse, Green Mountain Black Hawk, now owned by Dorsey & Burke, Louisville, Ky., many thought should have taken the premium, as he combined all the qualifications necessary for a good roadster in a remarkable degree.

What a complement to our Morgans! What other state can vie with us in this wonderful breed of horses. It is a truly remarkable result, and should be hailed

by every Vermonter with pride and admiration. Stockbridge Chief, of Cincinnati, Ohio, was the successful horse, and truly a noble animal. And when the wide blue ribbon, trimmed with dazzling brilliants, was placed upon his proud neck by the President, the multitude gave vent to their feelings in repeated cheers. I felt indeed proud of my old Green Mountain state, when I saw how justly the great West is appreciating our noble Morgans, which may be truly said to be the best horses in the world.

Among the brilliant ring of horses, I noticed Stockbridge Chief, Green Mountain Black Hawk, Addison, Black Prince, Morgan Hunter, Silver Heels, Flying Cloud, Morgan Star, Wide Awake, Granite State, Henry Clay, Rising Sun, Lightfoot, Comet, and others whose names I cannot recall. Was not that a sight worth seeing?

Another fine feature of this fair was the display of blooded horses from Virginia and Kentucky—one thousand dollars premium had been offered for the finest blood or race horse, which brought quite a number together. Revenue, owned by John M. Botts, of Virginia, was the successful horse, though many were loud in their praises of Lexington, owned by Lord Alexander, of Kentucky. Lexington seemed to be the favorite, having made the quickest time of any of the bloods South, but his total blindness operated against him in contending for the premium.

One more one thousand dollar premium was offered for the best bull, and taken by Lord Alexander. His "Duke" took it, though there were eight or ten in the ring, very superb animals. Brown's King Alfred took a liberal premium in the sweepstakes ring, which was a compliment to Illinois. These were all Durhams, which are the favorite cattle south and west. May success attend the St. Louis fair! —JOHN GREGORY, in *American Stock Journal*.

PROTECTION.

IN very many places in California we need protection; not that we care a fig for any kind of protective tariff—except it be a heavy duty upon every importation of the Mongolian race—nor do we ask the interference of the Legislature or Congress in the matter we are about to present, because neither of these very important (?) bodies can give us the protection we would crave. We want something by which our homes, our gardens and our orchards can be screened from the strong inland blast of our summer trade winds. There are thousands of farms, and tens of thousands of acres of some of the finest arable land in the state, lying within the reach and sweep of these winds, where, except in some little protected nook or deep ravine, or on the leeward side of hills, not so much as a single tree exists, and never will unless we aid nature a little in the start; because, first, there is not the seed there from which a tree can grow; and if put there, it could not grow erect, if so fortunate as to grow at all. In some few instances we do find an oak growing under full exposure; but, in such cases, the limbs, like a cock's tail feathers, beautiful enough in their place, are all hanging one way from the stump or body.

With proper protection, and such as is in our power to grow, this one-sided condition of the limbs of trees can be almost wholly avoided. We must grow belts of living trees, of sufficient density and breadth, and in the proper positions to break the violence of the summer gales; for, not only are they of service in protecting from the force of the blast, but they possess a peculiarly modifying and softening influence upon the quality and conditions of the wind, rendering it more congenial to the habits, growth and perfection of all the finer arboricultural and horticultural products. Orchards and vineyards cannot be grown in perfection, even in our boasted California climate, if exposed to the direct sweep of the ocean winds, until they shall have passed far inland.

But first grow a screen or belt of timber upon the windward side, or commence its growth, and the garden and all low-growing shrubbery can follow the year after, and the succeeding or second year, the orchard. But how are we to grow this belt or screen of timber? It is easy enough, only set about it in the right way. There are, in all countries, some kinds of shrubs sufficiently hardy to withstand any and every vicissitude of climate. Let these take the outer and front rank, and don't be sparing of ground, nor suppose that a single row, of any description of plants, will offer full protection; you must give breadth to the belt, or you fail in your object; and a good rule to be observed in this is, let the outer or front rank of vegetation have twice the width on the ground that it will attain in height.

Let the second rank of vegetation be of taller growth, and a width equal to its height is sufficient. The third and last rank may be of yet taller habit of growth; whilst a single row, or at most two, at a proper distance apart, and the trees of one set opposite to the openings of the other, and you secure a perfect barrier against the worst winds that anywhere prevail inside the coast range, or to very many directly upon the open coast with a full exposure to the ocean winds. In other countries than California, as upon the broad prairies of the western Atlantic states, where the object is a protection from the bleak blasts of winter rather than summer, the different varieties of rapidly growing evergreens, constitute the most desirable materials for the formation of these screens; their perpetual leafage, with their inflexible, upright habit of growth, constitute two important requisites in trees for this purpose. But here, where the summer winds only are to be met, deciduous trees are but little inferior to evergreens.

Shrubs and trees for screens should be of rapid growth, perfectly hardy, with a staunch, upright habit of growth, particularly the rear rank or taller trees, and all of them possessing as much of beauty as they can be made to attain with their peculiar conditions of climate. From our own successful experience in the growth of one such orchard screen, upon a western prairie, we would advise their growth, in all cases where practicable, from seeds planted in the places in which they are to remain, and next to this, from very small trees. The reason for this is, that such trees as are never removed, or if removed at all, so small as to suffer but little loss of root, will more certainly and sooner send down their drought-sustaining roots deep into the earth; and we would further imitate nature by planting different species and varieties

of trees and shrubs, the more certain to secure, among them all, enough that may prove hardy and well adapted to the purpose, situation, soil and climate.

As the belt increased in effectiveness and strength, the honeysuckle, the climbing roses, and even the vine could be allowed to twine their tendrils among the larger trees, with the most pleasing effect. Upon this subject we find an admirable hint in one of our eastern exchanges, which we appropriate. "A little care, and the exercise of good taste in selecting and planting, would give a natural air to the plantations that would greatly heighten their beauty and add to their usefulness. The whole should be planted on thoroughly prepared soil, by which, we scarce need add, we mean deep plowing and the addition of such fertilizers as may be necessary. Care should be taken not to crowd the specimens, and they should be carefully cultivated for several years. If large trees are planted, they should invariably be mulched; but we would not advise planting large trees; it costs too much, besides there is but little gain. It takes such trees too long to recover from the effects of the removal; besides they are never thoroughly at home."

Now, were we to ask why these trees "never are thoroughly at home," and then be permitted to put in an answer, it would be this: A large tree cannot be easily removed without the loss of many of its deeply running roots or tap-roots; from the very nature of the case—at least experience shows it to be true—that such a tree, if large, never does renew them, or but imperfectly; of course, it never is again a perfect tree as nature first formed it.

Now the question may be asked, What kind of trees would you plant for such a screen? We answer, that for the outer or front of the belt, we would take the common species of *Malva* or *Mallows*; because it will thrive in almost any situation that possesses enough of soil to cover its roots. Next to these, or second in rank, we would put the yellow locust; and lastly, our own native, or the English walnut. Among the latter, or both the locust and walnut, raspberries and blackberries can be grown to profit until the shade becomes too dense. The species of trees, however, will depend much upon the nature of the soil. In some very low, moist situations, it might be better to substitute the willow for the mallow, the alder and California maple for the locust, and the sycamore for the walnut, or there may be a mixture of all the kinds named, together with the wild plum and other varieties of hardy fruits. Of course, it must be a matter of experiment to ascertain just which are the best varieties for particular localities. But that, in every locality in the state where it is desirable to grow such protective belts of vegetation, varieties of plants and trees can be found in abundance, and abundantly hardy for the purpose. The main first feature necessary in securing success is, that the first or outer portion of the belt consist of a low growth and tolerably thickly set, though it is not important that it should be what would be termed a compact or really dense mass of foliage; indeed, it is better that it does not present a perfect barrier to the full force of the wind; it is better both for the growth that composes it, as well as for that in the rear of it.

These timbered belts, upon our now treeless plains, would not only afford the protection absolutely required for the success of orchards there, but they would be the

means of beautifying the landscape, adding to the salubrity of the climate, the health and comfort of man and his domestic animals, by their influence in neutralizing the noxious vapors and miasmatic exhalations; and not the least, by their cooling and grateful shade. Our mountain readers, beyond the reach of the crushing trade winds of our valleys, will bear with us for occupying so much space upon a subject that so little interests themselves; but which we can assure them, is occupying the minds of many more of our bay and lower valley farmers, than ever find time or opportunity to put pen to paper on the subject; and who have desired that we should give the discussion of the subject a beginning.

HORTICULTURAL PRACTICES.

BY WILSON FLINT.

EDITOR CULTURIST:—I have perused the ably written article of Mr. Johnson, in your February number, with much pleasure; first, because it is indited in a courteous spirit, and lastly, the writer seems desirous of eliciting facts instead of theories. Before proceeding to answer some of the propositions made, I may be permitted to quote a passage in his remarks, viz: "Mr. Flint says: 'It is noticeable that, on the deep, alluvial bottoms of some of our rivers, where the tap-root penetrates to a great depth, the trees make a prodigious growth of sappy, spongy wood, destitute of fruit spurs.' Will Mr. Flint have the kindness to point to a particular locality? The mere repetition of a fallacy, word for word, promulgated by the editor of the *California Farmer*, merely for the purpose of giving vent to his personal malice against Mr. Lathrop, of San Jose, is not what is desired as a guide in horticultural practice, unless it can be proven that it is not a fallacy." I was not aware that I had committed a plagiarism on the editor of the *Farmer*; if my language is his, "word for word," it is because they are the appropriate words to form a concise and meaning sentence, and are to be found nearly as I have used them in Loudon on Arboriculture. Neither can I consent that they are a fallacy, merely upon the argument that they have been used "for the purpose of giving vent to personal malice." I have nothing to do with "personal malice;" I shall only discuss the tap-root question—the editor of the *Farmer* is abundantly able to defend his own motives.

Mr. Johnson desires me to point to a locality, where "the tap-roots have penetrated to a great depth, making a prodigious growth of sappy, spongy wood, destitute of fruit spurs." I will name two; the first, the McMurtry orchard, on the San Lorenzo creek, Alameda county, of sixteen thousand trees, a portion of them planted in the winter of 1855. The soil is a dark, sandy loam, twenty feet to the bed of the creek. These trees "have made a prodigious growth of sappy, spongy wood, destitute of fruit spurs." The other locality is my own place, on the alluvial bottoms of the Sacramento river, between Stockton and Sutterville. The soil here is alluvium, twenty-five feet to a thin layer of quicksand. Apple trees that have been planted six years,

show little signs of fruiting ; while twenty-five miles below, in the vicinity of Steamboat Slough, where the rich, dark, sandy alluvial is no more than six to twelve feet deep on the former sea bed, a compact clay, intermixed with the debris of marine deposits, apple trees are remarkable for coming into early bearing. The orchard of Mr. Lathrop, San Jose, is on a deep, loose soil ; now, without artificial irrigation, the roots necessarily would penetrate to a great depth in search of moisture ; but, as Mr. Johnson states, this orchard has received abundant irrigation ; the inference follows that the roots are surface feeders, having no necessity to go deep, but rather are compelled to remain near the surface within the reach of "atmospheric influence," to prevent being drowned.

The laws of atmospheric influence are entailed upon the piscine tribes, forcing them, at stated periods, to leave their dark, mysterious depths for sport in sunlight and air. Vegetable physiology also teaches that plants raised in the shade are of effeminate and sickly habit ; now an experienced nurseryman will reject the lower part of the tap-roots of seedlings, as they seldom ever grow when used in grafting, it being well known that they have little or no vitality. Tap-roots, or subdivisions of them, at a great distance below the reach of atmospheric influences, are soft, and, to use an expression of animal physiology, flatulent ; the bark scarcely distinguishable from the woody part, with barely any preceptible indication of albumen, which, nearer the surface, marks the growth of the root by an annual circle or wood layer. Now if a root, taken from a great depth below "atmospheric influence," will not unite with a scion and form granulations so as to emit roots, when receiving the best nursery treatment, can it be supposed to exert much influence upon the bearing tree ? I am of the opinion that, after it has penetrated beyond "atmospheric influence," it becomes inert, and that the tree then makes an effort to produce lateral or side roots, which, as they become more developed, entirely arrest the action of ascending and descending sap, rendering the tap-root inactive. Trees that have been grown without the tap-root being shortened, will, after a few years, be found to have thrown out side roots, unevenly distributed ; such trees, also, will have an ill-shaped head, there being more and stronger branches on the side where there is a redundancy of roots ; therefore, in order to insure a symmetrical head, it becomes a matter of first importance, that the young plant should have the tap-root cut off, so that the roots may start in all directions to induce an equal flow of sap on all sides of the tree, thereby stimulating buds and branches which otherwise would remain dormant. I have cleared on my grounds, a piece of land that was covered with a dense growth of oak ; where the trees were thick the timber was tall, with few branches on the tops ; such trees had tap-roots with scarcely no side branches, and the process of grubbing was to dig a hole on one side, cut the tap-root off, and pull them out. Other oaks which grew in isolated positions, branched low with wide-spreading heads, having also large and evenly distributed roots near the surface, running over a large space, but destitute of a tap-root, or merely an apology for one. Now apply these two conditions of culture to orchard practice, and what is the result ? The first of a flag staff habit, and when subject to gales of wind, resembling a lever ; its top a weight at the end,

with the ground as the fulcrum. Does such a tree present a favorable aspect for fruit-growing? Is it in reach of the pruning knife and fruit basket? Is not its trunk exposed to the blasting effects of the summer's solstice? Is the tap-root, which becomes confined to a narrow limit, enabled to gather sufficient food in its delving career of "down, down, down?" Would it not be more in accordance with nature and art, that a tree should branch low, with a wide-spreading head and an equal proportion of far reaching roots, particularly one designed for fruit-bearing.

Now I do not wish to be understood as condemning tap-roots; I am aware that they perform important functions, they being "roots that drink." Eminent English writers state that the practice is adopted in many parts of their country, of placing flat stones under the tree on planting, so as to give a greater spread to the roots. As before stated, I would prefer that the tap-root should be shortened, on planting out a young tree, so as to induce the uniform distribution of roots on all sides; afterwards, if the intention is to let the tree shift for itself, its roots will naturally become of a top character; while, if a judicious, careful cultivation is given the soil, they will remain near the surface, within the influence of light, heat and air—"requisites to the healthy functions of the tree." Chorlton, in his valuable treatise, "the American Grape-grower's Guide," says: "Avoid deep planting in all cases; for it leads to cankered roots, and places them out of the reach of the warming influences of the sun and the exhilarating action of the air, both of which are as beneficial to them as are light and heat to the leaves and branches." In the great nurseries of Europe and the Atlantic states, the practice of annually transplanting nursery trees, which are to remain for increased age, has gained general favor—the object sought being to obtain the largest amount of fibrous roots near the trunk of the tree: in this manner, trees in full bearing condition are removed to the orchard with safety.

There are those who advocate the planting of the seed where the tree is to remain; this might answer for the amateur culturist; but for extensive orchard enterprises in a climate like California, where it is so difficult, even with the best of a nurseryman's facilities, to get seeds to germinate, it is not worthy of serious discussion.

Mr. Johnson asks, "Will not the effect produced upon tree and fruit, depend much upon the nature and condition of the subsoil, its fertility, humidity and warmth." I answer, it will; because, in the ratio as it is porous and containing the nutriment elaborated by atmospheric influences, proportionately will be stimulated vegetable action. In the mountain districts many orchards are planted on a thin soil, underlaid by a talcose slate; on such ground the tree can "sink" no tap-root, and by necessity becomes a surface feeder, yet these trees flourish in a remarkable degree, coming into early and amazing productiveness.

Mr. Johnson states: "Now it may be that an abundance of water will produce soft, spongy, fruitless wood upon the apple, and just the reverse upon the vine; but really, upon what principle in vegetable physiology such a proposition is based, I am at a loss to determine." I answer, that the apple bears its fruit on spurs or buds, formed on the previous year's growth, and are the fertilized secretions, produced after the upward flow of sap has nearly ceased in the latter part of summer, at the time

the descending sap is hardening the albumen. Now, copious summer irrigation expands these incipient fruit buds into wood branches, which are checked only by autumn frosts. The grape, bearing its fruit on shoots from the current year's growth, remains unchanged under all vicissitudes, except that late summer irrigation keeps the vine growing up to the period of frosts, which sometimes kills the entire shoot of the season's production.

Mr. Johnson concludes: "It is evident he is not in favor of irrigation, and with a sweeping remark, asserts that 'vast injury is annually being done to young orchards and vineyards by an indiscriminate use of water.' Will Mr. Flint instance such orchard or vineyard?" I will name the large apple orchard planted by E. L. Beard, Esq., at the Mission San Jose, in 1853, where, for three or four successive seasons, a mill stream was kept running over the ground, which so drowned the roots that the orchard retains to this day a sickly, stunted appearance, and has never borne any considerable amount of fruit. In vineyards I will mention those at Los Angeles, producing large and fine looking grapes, but of so watery a consistence, that the erroneous impression is going upon the public that the California grape is unfit for wine. I name another; that of Mr. Norris, in the bend of the American river, near Sacramento, not artificially irrigated, but on so moist a situation that the grapes, though large and luscious when first gathered, yet so watery that they rapidly decay a few days after coming from the vine. In this category I will include all orchards and vineyards which receive a drenching irrigation after the middle of July. It must be borne in mind that, all over California, the moisture rises towards the surface of the land early in the fall, sometime before the approach of the rainy season; indeed, it is of such amount in some localities, that the streams flow down over beds long dry; and this accounts for the remarkable fall growth made by trees in many places. I do not see how Mr. Johnson can construe my language so as to make it appear that I am opposed to irrigation. In my former article I took strong ground in favor of winter irrigation, and referred to the bad effects of the indiscriminate use of water, mainly to show the ill-timed application.



TREES GROWING IN OR OVERSHADOWING THE GARDEN.

THERE are few things on which the owners of property look with more respect than old trees. Like old friends, they cannot well be discarded without a just and urgent reason; and even then the act of condemnation is often attended by such misgivings, that it is not until the object has been fully attained for which the old tree was taken down, that regrets for its absence give place to a feeling of rejoicing at the beneficial change effected. This very justifiable attachment to old trees may, however, be carried to excess. Many important improvements are effectually checked by "a tree in the way," which it would be almost treason to destroy; while, at the same time, should any uncontrollable agent, as a high wind or stroke of lightning,

do the act of destruction, the greatest friend of the unfortunate tree will hardly express a regret that it is gone.

Now, there is something certainly wrong in this; and the veneration in which the tree is held, is certainly much beyond its merits when it obstructs some particular view, shades some important border or building, or prevents the effectual accomplishment of some interesting alteration. Many windows are deprived of half their usefulness by large trees growing too close to them; and it is also a certain fact that many chimneys are made to smoke the rooms in a like case. It would be wrong to condemn that feeling which venerates old or fine trees; but when such stand in the way of an acknowledged improvement, the proper question to ask is this: If the tree in question was not there, would you wish to have it in that place?

If the answer be in the negative, then cut it down immediately, for it cannot be wanted. But it is not my purpose here to find fault with the propensity we mostly all have of clinging to something or other, but to complain of the practice of growing large fruit trees in kitchen gardens, as the apple, pear, and cherry trees are often found high enough to require a thirty or forty-round ladder against them to gather the fruit. These towering objects are much more hurtful in the kitchen garden than is generally allowed; as their roots, in the good cultivated mold of a kitchen garden, run a great distance, and the crops underneath are very indifferent in quality. As most gardens are more or less frequented by the family and their visitors, good, useful crops are certainly much more interesting than poor ones, with an indifferent crop, perhaps, of apples or pears on the trees which overhang them. Besides which, it so seldom happens that there is a good crop on trees planted so very widely apart, that it is much better to have all such trees growing in one place, and only so near each other as to occupy the ground without crowding. The ground on which such trees are growing might either be in tillage or in grass. If the former, some small crops, as currants or gooseberries, may be grown at distances of six feet apart; but the digging among these must be very shallow. There are hundreds of acres of orchards of this kind; and the same may, with equal advantage, be grown elsewhere. The object here advised is to relieve the kitchen garden of those high and over-shadowing trees which injure and disfigure so many plots of vegetable ground.

Now, in addition to the evil done by trees inside a garden, those outside it are often too near it. High trees on the south side of a garden overshadow it very much in winter; and fruit trees against walls so deprived of the sun in winter never do well. Trees are also liable to send their roots long distances foraging; and the more robust kinds quickly devour the fat of the land. I have seen a root upwards of fifty feet long, and nearly as thick at one end as the other, where it had got into a line of good material, and speedily found its way to the furthest end of it. Trees on lawns will also search out flower-beds, and occupy their enriched contents, with astonishing rapidity, to the detriment of the proper tenants there; while peat or bog-earth, of prepared plant-borders, is especially liable to invasion. It is, therefore, advisable in all these cases to keep a watchful eye on the intruder; and when the offending tree cannot be taken away, cut back its roots within its own territory. Supposing it to

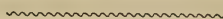
have usurped a flower-bed in the lawn, merely cutting its roots at the sides of the bed and renovating the soil, would only be to invite it to another feast, which, if in the growing season, it would swallow up in a very short time. But cut back its roots by making a ditch about two feet or so from the edges of the bed, and fill that ditch with something distasteful to it. Chalk rammed in hard answers pretty well; or, if it must be earth, let it be of the poorest kind. Some run to the expense of a brick wall; but I do not advocate that, as it is not always an effectual barrier. I once knew an excellent garden wall, with peach and other trees on the south side, and on the other side timber trees of various kinds were growing close up to it; and whether the latter smelled the better material their more delicate brethren had to grow on the south side, or by the poverty of their own side felt themselves justified in the invasion, certain it is that in two years, the whole of the twelve-foot-wide border on which the peach and other trees were growing, was filled with ash, elm, and chestnut roots. It is needless to say the peach trees suffered sadly, the evil not being discovered until much mischief had been done. It is, therefore, advisable for all who have timber trees growing in the neighborhood of their cultivated grounds, to look well to them, that they do not usurp more than their share of space. It is also advisable for all who plant fruit trees in gardens, to consider whether they are to become standards or not; and, if any danger of the latter, try and plant them somewhere else; for it not unfrequently happens, that a small tree is put in under the plea that "it can do no harm," which, growing up into, perhaps, a fine one, is then too good to cut down, and damage to the crops and irregularity in appearance are the results.

In condemning large standard trees in gardens, I by no means find fault with the trellis-trained ones which form so important a feature in some gardens. On the contrary, where the roots of a tree can be made to occupy the bottom of a walk, or other piece of ground not under cultivation, and its top likewise not being detrimental to anything near it, the tree then is not only excusable, but highly recommendable. Tunnel-shaped trellises have become fashionable of late; but where a large quantity of fruit has to be grown with the least possible trouble, be assured that large, full-grown trees are the best to produce this. Training in fantastic forms may please the eye; but the larger fruits, as apples, pears, plums, cherries, and the like, bear the most plentiful crops when not too much cut. This, however, is foreign to the subject in hand, excepting so far as to give additional reasons for not having too many fruit trees (trained or otherwise) in the kitchen garden; and be sure to keep the more voracious timber trees at a safe distance. Shelter from cold winds is often urged as a reason for having them so near; and when the belt in the rear of these is narrow and thin, it is not prudent to cut much away without due consideration; but where there is plenty to work upon, let the ax and mattock be freely used, and it will be found that trees, at fifty yards' distance from a wall, shelter it nearly as much as when only at fifteen yards, while their shade is less hurtful. The same may be said of buildings and other towering objects.—J. ROBSON, in *Cottage Gardener*.

The effects produced by the growing of large trees upon products that find a place

under their shade, or within the influence of their roots, are, to a very great extent, true, and applicable to the soils and climates for which the foregoing remarks are intended to apply; and yet, strange as it may appear, California is such an anomaly in matters of climate and soil, and peculiarities of vegetable growth, that almost the opposite effects are the results of the same causes. Thus, upon the great body of the foot-hill lands, the largest burden of grass in the natural pastures or grounds reserved for mowing, is invariably found under the shade of the broadest spreading, evergreen, as well as deciduous oaks; and many berry-producing plants are also produced in much finer perfection where partially shaded, than if exposed to the full blaze of our almost tropical sun.

Nor does the impoverishment of the soil, by the growth and the feeding of its roots, have the same influence upon minor vegetation that we see in other countries. Hence, nature, as if she knew what the tree wants most, sends its roots deep beneath the surface, where moisture and sustenance can always be secured. The principal growth of trees being in summer, the surface soil is never filled with roots, because too dry for their occupancy. As the trees increase in size and widen in their branches, the cooling effects of their shade, during the middle of the day, is rather grateful than otherwise to such vegetation as finds a home in the unimpoverished surface soil. Experience proves it; thus we repeat, that California, in not a few of its phases of vegetable growth, is an anomaly among the countries of the earth.—ED.



CHEESE-MAKING—SKILL MORE THAN SOIL.

THE *Country Gentleman* discourses in this wise: "An objection frequently brought forward, if the farmers of one locality are asked why the cheese they make does not sell at so high a price in market as that manufactured by their brethren in other localities—is 'that the land is not adapted for cheese-making, and that it would be almost a waste of material for them to attempt to make good cheese.' A recent English writer in commenting on this fact says: 'On further inquiry as to whether it is the peculiar geologic formation, or any remarkable difference in the species of grasses peculiar to the district that is the cause, I am again informed, this time rather dogmatically, that the land is not adapted for cheese-making, and that 'it's no use asking any more questions, because everybody knows that it isn't.' Being thus thrown upon my own resources, I refer to my geological map, and endeavor to throw a little light upon the mystery by its aid. In vain: for I find that the three countries of England producing the best cheese are not situated on similar soil. Cheshire is on the new, red sandstone; North Wilts and Gloucester are on the oolitic limestone; Cheddar on the carboniferous strata.'

"Mr. Tegetmeier, the writer alluded to, accordingly concludes that the cause of the differences must be sought in other sources; and there is little doubt that it depends almost entirely on the process of manufacture.

"In fact, this conclusion is borne out by further testimony; the agricultural association of Ayrshire, Scotland, have made it the subject of careful inquiry, actually sending a deputation to inquire into the plans adopted in those countries of England which produce the best cheese. The decision at which they arrived was, that the quality of cheese depends wholly upon the observance or non-observance of certain simple precautions, and that the price of the cheese depends wholly upon its quality. They were better pleased with the method adopted in the Cheddar district than with any other; the best Cheddar cheese always realizes from sixteen dollars and twenty-five cents to eighteen dollars and seventy-five cents per cwt., while that of inferior quality may be unsaleable at half this price. The general principles of the method are stated as follows:

"The milk is employed without the removal of any of the cream; for, as might be imagined, butter and good cheese cannot both be made out of the same portion of milk. The liquid used to coagulate the milk is rennet, which is obtained by steeping in water the salted and dried stomach of the calf; these *vells*, as they are termed, should never be used until twelve months old. It is a remarkable proof of the power of the animal juices, that the rennet obtained from one vell is sufficient to curdle enough milk to make half a ton of cheese. Before the rennet is added, the evening and the morning milks are mixed together, and the temperature of the whole is raised to eighty degrees, by heating a portion and mixing it with the remainder. In one hour the whole is coagulated. Portions of the whey are then drained off and heated. The whole of the curd is now minutely and most carefully divided; after which, as much of heated whey is added as will raise the temperature again to eighty degrees. It is then left for an hour, when the whey is drawn off and heated rather higher than before. The curd is again minutely broken, and pailfulls of heated whey are forced in, so as to raise the temperature to one hundred degrees. The whole is constantly stirred during the time, so that the curd becomes somewhat consistent. It is then left half an hour, in order that it may settle, when the whey is dipped out, and the last portions drained off without pressure. The curd is then cut into large slices, turned, and allowed to drain for half an hour, and when its temperature has fallen to sixty degrees, it is subjected to a moderate pressure for half an hour. At the expiration of this time, it is broken fine in a curd mill, and the best refined rock salt added, (in the proportion of two pounds to one hundred weight of curd) made into cheeses, and placed in the cheese-press. The next morning it is turned and pressed again; and the third morning it is laid upon the shelf, having been previously laced up in a piece of canvass, to preserve the shape while drying. The drying is accomplished in a well-aired cheese-room, kept at a temperature of from fifty-five to sixty degrees."

"Spite of all that prejudiced ignorance asserts, there is no doubt but that the inferior character of certain kinds of cheese depends mainly upon three or four causes: firstly, on the impoverishment of milk by the removal of the cream; secondly, on the employment of an excess of rennet, which produces a too rapid coagulation; thirdly, on the use of too high a temperature, from which results a hardness of the curd; and lastly, on the occasional want of cleanliness in the dairy. In the Cheddar

plan—the low temperature of eighty degrees in the first stages gives richness of taste, and the greater heat employed afterwards renders easy the separation of the whey. The most extreme and ultra cleanliness is absolutely indispensable, as a single drop of milk sinking into an absorbent floor will cause the cheese made during a whole season to become sour and valueless.”

TERRACING.

EDITOR CULTURIST:—As our hills are becoming valuable, and are being fenced in, especially about our villages, it becomes all important to know something about *terracing*: this must be done in order to make them really valuable. Can you, sir, or any of your correspondents give any information on this subject. It may concern many of your mountain subscribers to know something of this matter, especially where the hills are steep and can be watered. Is there any rule, and what is it? Should be much pleased to hear from you. Respectfully, &c.,

GRASS VALLEY, Feb'y 9.

W. P. GOLDSMITH.

Where the side-hill is too steep for cultivation, yet the soil is not rocky, it may be made productive and much more attractive by terracing. This applies especially to the vicinage of towns where land is valuable and locality of importance. For mere farming, it would not pay. Terraces are made by cutting down the hill as you would for a road, exactly—the object being to make as many level platforms as you can. In the states, and more so in England, it is usual to batten up the lower side of the terrace with sod, giving it a slant inwards, and making it more or less steep, according to the angle of the general ascent; the steeper, the more picturesque is the object; but, in this dry summer climate, the slope, unless walled up, should be easy enough to grow some verdure by the aid of irrigation. There is one rule of good taste that is imperative. Never make a straight terrace. Give each the greatest and most wavy curvature you can. Before you put your spade in the ground, let your plan be made; it will save you from expensive rectifications of blunders. We speak of spading; but the hill-side plow and scraper will do the work at one-fourth the cost, if the grounds are extensive enough—say a line of two hundred feet.

To make terracing at all successful in California, irrigation is essential. Do not go to work without previously providing this indispensable element. In nearly every town among our foot-hills, and in all our mining towns where water ditches course along the hill-sides, all of the land below the ditches that is not rocky, is suitable for terracing; and within a mile of town it will pay. As a general rule, fruit blossoms on such places escape the spring frost blights which visit the orchards of the flats below; and everything that grows bears greater, longer-keeping fruit—from the potato to the apple. But the difference is greatest in the grape. No vineyard, whether its purpose be for raisins, for wine, or for the table, should ever be set out anywhere but

on the hill-side. For this purpose, terracing will pay on any breadth of scale. So for hops. In each case, poleing and trellicing can be in great part dispensed with—the vines trailing over the slopes. In this way, if the horrid over-hacking of the pruning knife be spared, which brings ruin on many a vineyard, the most beautiful crops of the finest flavored grapes will be produced under the deep, leafy shade which the grape courts in this land of unrelieved sunshine.

What we call half-terracing would bring into value a vast body of land bordering our valleys and now nearly valueless. Take, for instance, a beautiful place in the vale of Napa. Through the waste brush hills, back of an elegant and park-like estate, there runs, with swift descent, a stream of perennial water. Barren looking hills jut out into the low lands to which cultivation is confined. Even the vast orchards of that estate occupy exclusively the low lands. Now, by a cheap dam, the waters of the rivulet can be led so as to irrigate a large area of the foot-hill land; and this, by half terracing—that is leveling and easy sloping, as the varying declivities suggest—could be made the finest orchard and vineyard land in California. We venture to say that it would give immunity from the spring frosts, which, year by year, make such havoc among the orchards and vineyards of the richer plains within only a gun-shot off.

This is a subject worthy of attention. Depend upon it, the orchardists of California have not made the wisest choice in placing their trees in the frost-biting flats; and they who, perceiving this, will now plant out fruit trees on the terraced slopes which overlook them, will rejoice in abundant crops, when those below will not have fruit enough to cover the costly attendance of this expensive country.

ANTHRAX.

To the foregoing practical views on the subject of terracing, we would add a hint or two. In all cases, let the width of the terrace be no greater than just sufficient to give a desirable height to the bank of the same, which should never exceed five feet. This is for the convenience, not only of turving or walling up the bank, but also the training of vines upon the slope; if more than five feet in height, they are also more costly of construction, because requiring a deeper cut on the upper side for the formation of the terrace. The rains, or the waters of artificial irrigation, should never be permitted to flow over the terrace; but should be confined to a small ditch on the up-hill side of every level, or rather grade, or, which is the same thing, at the foot of every terrace bank. If permitted to flow over the terraces, powerful rains would wash them away. Every grade should have just sufficient fall along the foot of the next bank above it to carry away, in its ditch, its own surplus water; and it should have no greater descent than just sufficient, and prevent it from flowing over the terrace below.

During moderate rains, small dams, made of a shovel or two of earth, at intervals along the ditch, will retain the waters that might otherwise pass off without fully saturating the terrace. In case of a heavy rain fall during a night, these dams should

not be of a hight or solidity sufficient to throw the water over the surface level and down the banks, but should be such as would be easily washed away by such excess of water. It will be found difficult to support the banks with any of our grasses, unless an abundant irrigation can be secured. Stones make an excellent bank protection; they should not, however, be made into a thick, heavy, perpendicular wall, supporting the bank, because such walls are the most perfect homes for vermin that could be well devised; and, what is more, the earth against them will become too dry for the roots of vegetation.

First, make a sloping bank of earth at such an angle that it will be likely to stand alone; then face the bank with a complete single layer, or covering of cobble-stones, or any kind of stones the easiest procured; avoid making or leaving cavities between the stones, as these harbor squirrels, mice, etc. The wall of stone is merely to keep the earth bank from crumbling down. No vegetation should be set nearer than three feet of the edge of the terrace. This distance gives ample room to pass around any description of tree, bush or vine that may occupy it.

SMUT IN WHEAT.

EDITOR CULTURIST:—We take the CULTURIST, and find in it much that is useful; in it and the *Farmer*, I have seen great complaints of smut in wheat, and I think soaking the seed in blue vitriol is recommended as a preventive. I do not say that it is not one; but I do say, that I have used lime, with unfailing success, from 1806 to 1849—forty-three years—on my own farm in Surry, Hancock county, Me. My father moved to Surry in 1804; in 1806 we determined to try a crop of wheat, and bought three bushels of one of our neighbors who had raised some the year before; we had lived in Cambridge, Mass., where wheat was not raised, and it was supposed could not be, on account of the great quantities of barberry bushes, common in that neighborhood (*berberis vulgaris*).

Being, therefore, entirely ignorant, as to the proper mode of cultivating wheat, we took the course recommended by an old Irishman that lived with us. He said that he had always, at home, (Ireland) seen seed wheat soaked in beef pickle, and then dried with slacked lime. We put our seed wheat into beef pickle, and kept it in twenty-four hours; then skimmed off all that rose to the top of the pickle, and were careful to separate and throw away all the foul seed and sediment at the bottom of the cask; then spread the wheat on a floor, drained it, and then dried it perfectly with slacked lime. The three bushels of wheat was sown on three acres of ground. As there was not soaked wheat enough to sow all the ground that had been prepared, a little more was obtained from the same person, and sowed without being soaked or limed. The crop was a good one; all that was produced by the soaked grain was very fine—perfectly clean, and entirely free from smut; that obtained from the grain that was sowed without washing or liming, was quite smutty. Our neighbor, from whom we obtained our seed wheat, sowed his dry, without either washing or liming,

and the crop he raised was so smutty, that it was not fit to eat. The next year, we prepared our seed wheat in the same manner as the year before, and had equal success—no smut at all. The year after, we soaked and cleaned our wheat as before, but having no lime, we dried it with house ashes, and the crop was smutty.

We then naturally came to the conclusion that it was the lime, not the beef pickle, that was a preventive. In the spring of the next season, we prepared the smutty wheat we raised the year before by soaking, as before, and drying it with lime, and our crop, in the fall, was perfectly pure—not a kernel of smut in the whole crop. In 1816, we purchased Sir Arthur Sinclair's Code of Agriculture, and there found our experience fully confirmed by his experiments. Sir Arthur Sinclair wished to ascertain the cause of smut in wheat; and for this purpose he took two parcels, one smutty, the other free from smut, washed each in pure water, then examined each separately with a microscope, and found the water, in which the smutty grain had been washed, full of a small insect, not visible to the naked eye: that which was free from smut, was without the insects. Sir Arthur then tried to destroy the insects by putting into the water different substances, believed to be destructive to insects, and found nothing that would kill them till he dropped a lump of lime into the water in which they were, and it destroyed them instantly.

In 1817, our wheat was treated in the same manner, and with like success; but, in 1818, we had no lime, and thought we would try drying in plaster, having, at that time, a great quantity of ground plaster on hand; and, although we had a very large crop—the largest I ever knew raised in Maine, thirty-five bushels to the acre—the value was not so great, as it proved to be a little smutty. After that, till I came to California, in 1851, I continued to soak my wheat, before I sowed it, in strong beef pickle, took off everything that floated, and all the sediment at the bottom of the vessel in which it was soaked, drained it, and then dried it with slacked lime, and never had a kernel of smutty wheat in the whole thirty-two years.

VINE SPRINGS HACIENDA, COLUMBIA, Feb'y 9.

E. S. JARVIS.

RAISING HOGS ON THE TULE.

EDITOR CULTURIST:—You ask me to give my experience in the raising of hogs on the tules. As I have never seen anything treating upon the subject in any work on agriculture, in California, I will give you my experience, as by so doing, I may save the inexperienced, about to commence the business, some expense, a great deal of trouble, hard work and anxiety of mind. If I can do this, I shall consider my time well and usefully spent.

In purchasing tule land, for the purpose of raising hogs upon it, the very lowest land you can find is the best; it should be where the tule grows rank, and where it is too low for grass, and covered, the greater part of the year, with from two to six inches of water. In situations of this kind, the ground is soft and easily rooted up by the hogs, if they are not under four months old; under that age, they are too

small and weak to tear the roots asunder, but they can follow the older ones and pick up what they leave. I have some good working sows that have raised as many as eight pigs at a time in these tules, and entirely escaped from the mink and raccoon. At the age of six months, they should be taken from the sow, for fear they might weaken her too much, rendering her unable to procure food sufficient for herself and young, for when this happens, the lives of the whole are in danger.

But, even in the most favored tule ranges, you may expect but little increase in your swine herd. The life of the hog in the tules, is but a precarious one at best; for he has got to root, from morn to night, to make a living. The king of Tahiti, when visiting England, declared that the only real gentleman of leisure that he had seen, was the hog; that he was better fed, and had less to do than anybody else he had seen. The condition of the tule hog will hardly compare with the hog of John Bull. In our best cattle ranges, where the tule is tough and strong, the hog will die with hunger and hard work; for in these situations, the tule is too strong to root up.

Too much dampness, or water, affects the hog as it does the human; he will work or fight hard all day for a living, up to his belly in water and mud, and feel none the worse for it; but let him lie down on a wet bed at night, and he soon looses his energy, gets lousy, and finally dies. Lousiness can be prevented, to some extent, by rubbing them once a week with a mixture of two parts grease to one of turpentine; but to rub them with it, they must first be caught. I would not catch them with a dog, as is the too common method, but catch them with my hands, and without hurting them; and I include among those to be caught, such as never saw the face of a human being. If knowledge or mind does not convey the idea of power, or is power itself, morally as well as physically, it is worthless to us. In wild hog catching, it gives us this power. To catch the wild hog, I have a few pet hogs; that is, hogs fed from the refuse of the kitchen, as decoys; when I want to go to the hunt, I soak a little barley in warm water, so as to make it smell. I then put a little of this barley in a bag, and take the tame hogs along with me, by giving them a handful of the barley, now and then, to invite them after me.

When I get to the situation where the wild hogs are—and I judge of this by seeing where their fresh tracks are—I wait for the tame hogs to come up and smell the barley, but don't give them any of it; this causes them to make a great noise, [a mighty squealing, we suppose.—ED.] and looking round and listening, I shortly hear a rustling amongst the tules. The wild hogs hear the tame ones, and smell the barley. They now make two or three circles about me, coming in nearer every time they come round. I now scatter the barley, and in come the wild hogs, mixing up with the tame ones, and all eating together. I then advance towards the wild hog I wish to catch, moving gently, and when I get within about three feet of the animal, I raise my hand and arm in the air and curve it down upon him, touching only the top part of the hair with my fingers; I then gradually approach the skin and commence scratching him. On discovering what you are doing, he may run off; but, finding that you intend him no harm, he will come back again to a certainty, and you commence with him again. The hog is now in your power, and by returning home

with your tame band, the wild hog is sure to follow, or you can catch him by the hind leg. The hog is a great stickler for fair dealing, so when you call them, you must be sure and give them something to eat; for if you call them twice without feeding them, you loose all control over them; you may call, but they will not come in, but keep away and turn wild if the range is suitable.

The best plan, however, to raise hogs on the tules, or in the tule country, and grow rich by the operation, is to raise feed for them, by cultivating a piece of tule land, raising pumpkins and sugar beets. The beet is the best for milk animals, including the hog when she is suckling her young; but the fattening quality is, I believe, altogether on the side of the pumpkin; but to make perfect hog feed, you require both, and you can raise both to perfection, and in about equal quantities, upon good tule land. South of Steamboat Slough, beets can be planted any month in the year and do well. I believe the plan of raising feed for hogs altogether better than to expect them to gain their entire living from the tules. The time required to look after them would nearly raise their feed, to say nothing of the increase, which would be far greater from well fed animals than from wild; for really, but little increase can be expected from hogs running in, and deriving their entire sustenance from their labor among the tules.

THOMAS CUBBINS.

INVENTION AND CIVILIZATION.

THE progress of civilisation is indicated by MECHANICAL INVENTIONS. We set the world ahead by mechanical devices, and just in proportion as we develop the resources of nature by inventions, do we leave the world the better for having lived in it. It is our privilege to convert the forces of nature and all her various materials, such as iron, copper, lead, silver, gold, wood, water, wind, air, light, heat, the tides, soils, etc., etc., to the service of mankind; and, by mechanical inventions, we are now enabled to navigate oceans, lakes and rivers, to travel by rail, at the rate of a mile a minute! and to convey and receive intelligence by telegraph from one end of the continent to the other. All this results from useful, mechanical inventions. "That man who makes two blades of grass grow where but one grew before, is a benefactor;" and he who invents an instrument which will do the work of human hands, is also a benefactor. The plaining-machine performs the labor of scores of men; the sewing-machine does the work of many thousands, and rapidly earns princely fortunes for the manufacturers; while a single invention—a small part of this machine—the *lock stitch* alone, pays the inventor two hundred thousand dollars a year! The cotton gin, the invention of a young New Haven lawyer, has given to the world, in the new facilities for cleaning cotton, many millions of dollars within the last fifty years. Nor is the field for successful inventions exhausted. It has but just been touched—each new discovery renders another necessary. There are more than twenty patented inventions used in the manufacture of a single Colt's revolver; and perhaps even more than that number in the manufacture of a single locomotive.

Greater riches and higher honors are in store for inventors than for those who ornament the "learned professions." The world is set ahead by the inventor. Reader, have you any original ideas? If so, why not bring them out? It is our privilege to use all the elements of nature for our servants; we make the sun paint our pictures, the wind propel our ships, electricity to carry our messages with the rapidity of thought. The wind sweeps over every man's farm, at the rate of a million horsepower every day! may it not also be used? And then look at the immense water-power—why not use all this? Where are those highway steam carriages? (we have excellent portable steam engines, for farmers' use) the steam plow? The steam reaper, mower, and thresher offer a field for both honors and profits; but we only suggest; others, who may be blessed with the faculties for invention, may put them into practice and receive the emoluments. We, of the nineteenth century, in the year 1860, are a long way ahead of any preceding age in the use of labor-saving and civilizing and mechanical inventions.—*Life Illustrated.*

IMPROVEMENTS—ERICSON'S ENGINE.

AMONG the numerous improvements lately made in our city, we noticed to-day the new and extensive carriage manufactory of H. Casebolt & Co., on Market street, near Montgomery. After inspecting the different departments of the manufactory, where the entire wood and iron work and trimming of every description of vehicle, from the common wagon and omnibus to the most elegant and costly carriage are made, we extended our visit to the basement story to see the Ericson Caloric Engine, recently imported by Ogden & Wilson, who are agents for the sale of these engines in California. These gentlemen have two caloric engines at Casebolt's establishment, which were put up and set to work by Mr. Louis Blanding, of this city, who, by long and diligent and practical experience, has made himself perfectly familiar with their working. Mr Blanding has set up and worked several of these engines in different parts of the state, and will cheerfully explain their capacity and principle to those who feel an interest in this new and great motive power as now applied. The small engine has a cylinder twelve inches in diameter, six-inch stroke, furnace only six by eight inches; it has capacity to pump a one and one-fourth-inch stream of water sixty feet high, drawing it twenty feet, and will throw from seven hundred to eight hundred gallons per hour through this distance, and it can be applied to any kind of work requiring equal power.

The large engine has a cylinder of twelve inches in diameter, eleven-inch stroke, furnace, fourteen by fifteen inches—entire weight, thirty-four hundred pounds. It will give from four to six horse power at a cost of thirty-five cents per day, using wood or coal as fuel; and as no water is used, and no engineer after the engine is once put in order, the above is the entire cost of working it. The large engine is now working daily at Casebolt's, in driving circular saws and other machinery used in carriage-making, and we should suggest to all who are so disposed, to spend an hour in witnessing the practical results of this wonder of the age.—*Eve. Telegram.*

Editor's Repository.

ERRATUM.—Second line from bottom, page 409, "Stockton" should read "Sacramento."

We have received a letter, *without signature*, from Big Oak Flat, ordering the CULTURIST. To whom shall we send it?

DISTRICT AGRICULTURAL SOCIETIES.—It would seem from the recent movements of a few of our agriculturists, who were the leading spirits in the early organization of the State Agricultural Society, that it was the intention of its framers and supporters, that the society should itinerate, or annually migrate from one portion of the state to another in the holding of its annual fairs. The agriculturists of different sections of the state have shown their devotion to the interests and well-being of the society, by their continued membership, from year to year, and payment of annual dues. As there are members residing in remote parts of the state, or remote from the center, as at Los Angeles, Humboldt and Siskiyou; as it was the original intention that the society's fair should itinerate, they claim that, as it is evidently tending towards permanent location at some point, as at Sacramento or San Francisco, where the masses that attend the annual fairs can find sufficient, comfortable accommodation, that therefore, these remote districts of the state are debarred the advantages of a participancy in their turn, of the benefits and advantages that result to those cities in which the fair is held.

They claim, therefore, that the state fair has ceased to meet the wants of the agriculturists of the state, and propose to organize district societies, the districts to be composed of contiguous counties conveniently situated for holding each their own annual district fair. It is proposed to have the several county societies, auxiliary to the district societies, and the district societies auxiliary to a state society. A northern district society was organized last year, and held its first fair in Marysville; it was a success, and the organization promises well for the future. A movement was made last month, by the agriculturists of the counties bordering on, and contiguous to San Francisco bay, for the formation of a district agricultural society, embracing their respective counties. A convention was held on the twenty-fourth of February, the proceedings of which we annex from the *Alta California*:

The agricultural convention met this morning in the Twelfth District Court-room. Regularly elected delegates were present from Sonoma, Contra Costa, Alameda, Santa Clara, and San Francisco counties—about forty members in all. Judge Daniels, of Santa Clara, was elected President, and Frank Fargo, of Alameda, Secretary. A committee on credentials was appointed, and the credentials of the delegates were examined and found correct. The following persons were recognized as entitled to seats in the convention:

Alameda.—A. H. Myers, D. E. Hough, William P. Toler, Dr. H. Gibbons, A. Luelling.

Contra Costa.—George P. Loucks, H. H. Fassett, C. T. Cutler, N. Jones, W. Bradford.

Sonoma Horticultural Society.—Geo. H. Butler, John Swett, Wm. Boggs, Mr. Swift.

Sonoma Agricultural and Mechanical Society.—R. Matheson, William Hull, William Ordway, J. Q. Shirley, H. L. Weston, N. P. Stafford.

Santa Clara.—William Daniels, Cary Peebles, J. F. Kennedy, Thomas Campbell, Charles G. Thomas, L. Archer, Wm. Reynolds.

San Mateo.—John Cumming.

Monterey.—Mr. Terrill.

Santa Cruz.—Wm. N. Slocum.

San Francisco.—Wm. Green, Michael Hayes, John J. Haley, J. L. Burtis, John Center, R. B. Woodward, Edward Raymond, W. C. Walker, Wm. O'Donnell.

Subsequently Mr. Morgan, of Marin, Mr. C. A. Ely, of Ohio, and J. S. Silver, of Pennsylvania, were invited to take seats, and then all officers of horticultural and agricultural societies, and of the Mechanics' Institute, of San Francisco, present, were invited to take a seat in the convention and a voice in the proceedings.

The following permanent officers were elected :

President.—William Daniels, of Santa Clara.

Vice Presidents.—R. Matheson, of Sonoma, G. P. Loucks, of Contra Costa, and J. L. Burtis, of San Francisco.

Secretary.—Frank F. Fargo, of Alameda.

Several letters were read, including the following, from the President of the Napa County Agricultural Society :

To the Chairman of the Agricultural Convention, San Francisco :

SIR :—It being inconvenient to attend the convention personally, in response to an invitation received, I would say that, under the circumstances in which many of the members of the former State Agricultural Society find themselves placed, I consider it very desirable a new association should be formed, by which a more equal justice will be done all parts of the state, local interest in agricultural fairs encouraged, and the state society itself placed on a basis which will render it independent of sectional interests in its management, and, while affording a greater freedom to the exhibiter, be less cumbrous and uncertain in its action.

The old organization called for too great a tax of time and labor from its officers, whose only reward was the consciousness of advancing the agricultural interests of the state ; while those who reaped the entire pecuniary interests of the exhibition were not called upon either for labor or for its support.

The absolute necessity which existed of exacting the fee of membership from all exhibitors, acted as a bar against those of limited means, and prejudicial to the very interest the society was instituted to advance. A society fostered by the state's bounty, should, in my view, be free to all exhibitors of the state's products. On the other hand, the ease with which membership could be procured, rendered the society at all times liable to be controlled by interested parties, whose views might be those of immediate pecuniary interest, instead of the development of the state's agricultural resources.

Again, the exhibitions were altogether too frequent, and extended over so much of time, as to leave little encouragement to the county fairs, the labor and effort of those most interested in such associations being too severely taxed to be able to devote the necessary attention to secure the success of both local and state exhibitions in the same season. Few but the initiated, know how to appreciate the valuable time and labor which have been bestowed, or the genuine public spirit displayed by many of the officers of the old institution ; and where time is so valuable, care should be taken in a new organization to make that tax as light as possible.

My idea is, district societies should be formed, holding exhibitions and sale fairs wherever the counties are not strong enough to organize their own societies, which, when it can be done, I believe to be the most valuable effort in this direction. I think once in three years sufficient for a state exhibition, which should be held in that city offering the best facilities, in all cases free of expense to the society ; the labor of preparation to be borne by that community receiving the immediate pecuniary benefit. In the constitution of the state society, whatever limit there may be to membership, I think the *entire control and management* should be left to a board selected by the

delegates from the county societies, the presiding officers of which to be *ex officio* members of the state society.

I think the agricultural interest thus organized and represented, with an able secretary, earnest, zealous and permanent in his office, fully conversant with the agricultural business of the state, would be at all times in harmony with local interest, be in working condition, without too great tax of time and labor from its active members, and be successful in commanding the entire confidence and support of the productive interest of the state. Yours respectfully, J. W. OSBORN.

The business committee made the following report :

Your committee, consisting of one member from each County Agricultural Society, and one from the Mechanics' Institute, of San Francisco, and the State and Sonoma County Horticultural Societies, was organized by the election of John Cumming, Chairman, and H. H. Fassett, Secretary, and would respectfully submit the following report, to wit :

Whereas, in consequence of the action of the State Agricultural Society, said organization has ceased to meet the wants and wishes of the agriculturists of the state, therefore we recommend a division of the state into districts, to which the county societies therein may become auxiliary societies, with a view to the organization of a state society on the part of the district societies, to which they may become auxiliary. The following, in the opinion of this convention—subject, of course, to such modification as the Legislature in their wisdom shall see fit to make—would be a proper division of the state.

The Northern District, as already embracing all the counties north of Sacramento.

Sacramento District, embracing Sacramento, Yolo, Placer, El Dorado, and Amador.

San Joaquin District, embracing San Joaquin, Calaveras, Tuolumne, Stanislaus, Mariposa, Fresno, Buena Vista, Merced, and Tulare.

San Francisco Bay District, embracing San Francisco, San Mateo, Alameda, Santa Clara, Santa Cruz, Monterey, and Contra Costa.

Sonoma and Napa District, embracing Sonoma, Napa, Solano, Marin, and Mendocino.

Humboldt District, embracing Humboldt, Trinity, Siskiyou, Del Norte, and Klamath.

Los Angeles District, embracing Los Angeles, San Bernardino, San Diego, and San Luis Obispo.

Your committee, therefore, request the Legislature of the state to repeal the law appropriating \$5,000 annually to the present state society, and that a just and liberal appropriation be made to such district societies as are now, or may be organized, and do hold district fairs during the year 1860; and would respectfully submit the same to your consideration.

JOHN CUMMING, *Chairman of Committee.*

This report, after some discussion, was adopted entire.

The convention adjourned to meet at the call of the business committee.

San Francisco District Agricultural Society.—After the adjournment of the agricultural convention, the delegates representing the counties belonging to the San Francisco district met for the purpose of organizing a district association. A committee was appointed to draft a constitution. A draft of a constitution was presented, and after some consideration, was referred to a special committee, composed of A. H. Myers, of Alameda; Wm. Daniels, of Santa Clara; John Center, of San Francisco; D. R. Ashley, of Monterey, and Wm. Blackburn, of Santa Cruz, who are called upon to make a report at an adjourned meeting, called to assembled at San Jose, on the 21st of March. The meeting adjourned.

CRANBERRIES.—We have ordered a lot of Highland or Bell cranberry plants, to fill, in part, an order of one of our subscribers remote from the coast; also an order from an amateur grower of fine fruits in Alameda, for the same. We have also received a letter of inquiry from "Illinois," resident of Columbia, desiring to know if cranberry plants can be procured nearer than New England. They can be procured in Oregon, but of a variety quite inferior to the Eastern varieties, and hardly worthy of cultivation if the better can be procured.

OUR FRONTISPIECE.—We present this month a substitute for what we should have given, had we not been disappointed by our artist. It consists of a section of brood comb, containing a queen bee cell, etc.—see next page.

The *solid steel-tooth cultivator* will commend itself to the attention of agriculturists everywhere; it is an invaluable implement of its kind, and without a superior, either as regards mechanical construction and workmanship, or its effectiveness as a pulverizer of the soil. See advertisement.

A CALIFORNIA WORK ON BEES.—In our last number we gave notice of a forthcoming work on bees and their culture, by J. S. Harbison, of Sacramento. Owing to imperfections in the engravings intended for the work, and a determination to secure better, its publication will be necessarily delayed till some time in April. In the meantime, we have been permitted to make such extracts from advance sheets of the work as will give our readers something of an idea of the manner in which the author handles his subject. Of course, we are without the plates and illustrations referred to in our extracts; but we believe enough can be gathered from the written description, to satisfy any one of the real merit of the work, and its value to the novice in California bee culture.

Formation of Colonies.—The proper time to commence colonizing is from one to two weeks earlier than natural swarms leave the parent hive. This depends on the season, and varies in different localities. The nearest approximation to the time, would be from eight to ten weeks from the time that they commence to carry in pollen from the willows and other sources of early pasturage. In Sacramento and vicinity, they commence to carry in pollen about the first of February; and the first swarms, for the past three years, have departed from the first to the fifteenth of April; but most of the swarms may be expected during the latter part of this month, and through May.

Primary Divides.—One primary divide with queen, nursery formed, may be depended on to supply from three to eight embryo queens—sometimes a greater number is raised—five may be a fair average number.

Time to Commence.—Suppose the owner of five hives of bees finds, on the 22d day of March, that his bees are becoming crowded in the hives, and from the favorableness of the season, believes they would swarm early in the following month; then let him proceed to make one primary divide and form a queen nursery in the queenless division. For this purpose, choose one of the hives that is strong and likely to have the most brood. There should be at least five sheets of comb, containing brood in the hive, selected for this purpose. Commence by opening the hive; remove the chamber floor L, and glass frame K; then choose the side of the hive having the straightest combs; now raise the front tenons of four frames out of the grooves in the front board. If they are glued fast with propolis, take a chisel and pry them loose; then move three of them further from the side one to give space for it to be removed first.

Position.—Let the operator stand with the left side close to the hive, and with the left hand take hold of the corner of the frame, resting against the front board, and with the right hand the outer corner; now raise the left hand, carrying the frame upwards and outwards, moving on the fulcrum until free from its rest in the sill. The movements should be slow and gentle; now place this frame in an empty hive ready at hand; then take hold of the second frame in the same manner as before directed, and turn the comb with the left hand sufficiently to keep it from rubbing the bees and adjacent comb; then, by the upward and outward movement, it is freed from its rest, and without jar, the same as the first one, this frame is to be examined for the queen, and is also placed in the empty hive with the previous one; each of the other frames are removed in the same manner, and part are placed in the hive with the two previous ones, the others to be stepped over into the vacancies first formed.

Find the Queen.—A sharp watch has been kept for the queen, and, if found, place her in the new hive; but if she has not been found by this time, spread a sheet on the ground, and take the combs, one by one, and with a quick motion, shake the bees on the sheet; in handling, combs, at all times, must be kept with one edge upright, to prevent breaking. The queen will most likely be found in the cluster on the sheet; sometimes she crowds off the combs, and is found in the inside of the

hive. When found, place her in the new hive; then examine the combs, and choose one-half of the most mature brood combs, and place them in the hive with the queen. One sheet of comb-containing stores, should be placed first at the side, and the brood placed compactly adjoining; the empty frames are added, and the hive is ready to receive its share of bees.

For want of room, we are compelled to omit further extracts this month, except a few words descriptive of a portion of our frontispiece. The engraving illustrates a section of brood comb taken from a queen nursery, for the supply of a queen to a new colony, and a single queen cell, *L*; whilst *m* is the rudiment of a cell which the bees continue to build at, until the emerging of the supplied embryo queen.

SAN FRANCISCO MEDICAL PRESS.—This is the title of a new Medical Journal, established in San Francisco, by Prof. E. S. Cooper. The merits of the Press, as a medical production, we are not perhaps altogether competent to judge of; but the forcible suggestions and common sense views it takes of the influence of medical men, associated in bodies harmoniously acting for advancing the interests and reputation of the profession, are such as strike with peculiar force every practical man. It contains a large number of original communications from medical men of reputation in San Francisco, showing that the profession of this city is disposed to further its interests by their literary aid. The enthusiasm and love of the profession, of which the editor is so distinguished a member, together with the friendly spirit it shows towards all medical men, must, we think, render it a favorite with the profession of the state. There are few works published in which liberality, self-sacrifice, and a determination to labor unceasingly for deserved reputation and the advancement of a noble cause are more apparent, than in the "*San Francisco Medical Press*."

CORRESPONDENTS.—We respectfully invite our friends to give us their experience for the general good. Almost every farmer has knowledge of some facts which would be valuable to all his brother agriculturists. It will always give to every true man a heartfelt satisfaction to do something to advance the general good. It is our business, and our greatest pleasure, to be the means of thus circulating interchanges of useful experiences among our producers. Let no man say, "Oh! I can't write." Please to send us your *facts*, your deductions, and your counsel—in your own plain way—and if any mere adornment of words is needed, we will supply it. But let us say to you, that the most acceptable pieces often come from persons who think they cannot write. If you can talk, you can write out your talk; and this colloquial style always reads best in a periodical journal. No man knows that he can't write: let him try and he will find, perhaps, to his amazement, that in his unstudied phrase, the homespun truths strike us with a charm and a force that win us, and command our deepest respect.

HYACINTHS and other bulbous flowers may be arranged with very pretty effect thus, viz: Place the bulb in a saucer or in any shallow vessel; half fill the vacant space around it with pebbles and shells, sufficient to steady the plant; then fill up with water. This is much prettier than the glass bottles usually employed. We are indebted to Chinadom for the suggestion.

SANDY LOAM FOR GRASS.—We have received a communication from one of our subscribers at Healdsburg, Russian River, desiring information as to the adaptedness of sandy loam for the production of grass. In all temperate countries, where rain falls at short intervals during the summer months, a sandy loam, if possessed of tolerable fertility, is considered one of the best of all soils for the maturation of general farm crops; and yet, there may be circumstances under which it is illy adapted to the production of the grasses, if we except the clover or tap-rooted family. Wherever there is sufficient fertility and moisture in the soil or subsoil for the support of vegetation, there alfalfa and the clovers can be grown; of course, we except countries that are too frosty. Quite recently, the introduction, or rather increase of the culture of the clovers in the Southern states, is

working a revolution greatly to the advantage of their agriculture ; and yet, the finer bladed grasses do not succeed well there.

In most countries, ranging from temperate to torrid, the majority of the grasses are annual, or at best, biennial ; and this fact holds good as regards most of the natural grasses of California. Whether any of the introduced grasses will prove greatly superior to the native, has not as yet been satisfactorily demonstrated. Certain it is, that neither the native or introduced grasses, will ever yield a continually green herbage from spring to autumn frosts, under a California sunshine, upon sandy loam, without a natural or artificial irrigation. Under the head of naturally irrigated lands, we would include all such as are watered by the natural flow of springs and rivulets, and all lands so near the level of our bays and rivers as to be kept constantly sufficiently moist by the absorption of their waters. Upon any other than such lands we can never hope, unaided by artificial irrigation, to succeed in the growing of other than the merest annuals—the clovers, being tap-rooted, are exceptions. Should any of our readers have succeeded in the growth of grasses, other than clover or alfalfa, upon unirrigated grounds, if they will give us the result of their practice, they will confer a benefit to the agriculture of California.

HOP CULTURE.—Numerous inquiries are pouring in upon us, relative to hop-culture. One correspondent in Diamond Springs, another in Auburn, three in Marysville, one in Potter's Valley, Mendocino county, and one in Alamo, Contra Costa county, are all asking us to tell them what we now about hop culture in California. Now, gentlemen, had you but omitted the words, "in California," we could have done something for you, based upon our own experience ; but, as it is, we must rely upon what information we have been able to obtain from those who are cultivators of the hop here, and our former Eastern experience.

First, as to soil : a rich, sandy loam, rather moist than dry, is to be preferred ; but any good garden ground will grow hops. Prepare the ground as for corn or potatoes, making it mellow and working it deep ; then lay off your hills—in accordance with Eastern practice—in rows eight feet apart and six feet apart in the rows. In our extremely dry and sunny climate, it may answer to plant closer than this—say six feet each way—but closer than this cannot be recommended, particularly upon our fertile river alluviums ; on some of our drier mountain and hill lands, where the growth would not be as luxuriant as on the moister low lands, five to six feet might be admissible. The rule must be this : Give them that distance that will admit of a full and free circulation of air among the vines. Where strong winds prevail, they can be planted closer than where there is but little circulation.

Plant three cuttings—some would say four—in each hill, six inches apart ; cover the same depth as potatoes. As soon as the vines begin to make their appearance, set the poles ; this matter should not be neglected, for the hop is not as apt to take kindly to the pole, unless it has an opportunity to do it at the commencement of its growth. It may be necessary at first, to assist some of the vines in taking their first hold of the poles. This is done by inclining the vines in the direction of the pole and pressing a little dirt with the foot gently on the outside, at the surface of the ground. As you face the pole, always carry the vine to the left side of the pole, as it never runs round but one way, and that with the sun—as some say—or from the east to the south and west side, and so round ; and a singular fact in regard to this is, that, if prevented from going the way nature has suggested it should, it is actually retarded in its growth, and, if persisted in, will cause it to throw out new vines from the bottom, as if in hopes they may be more fortunate. The poles should be from twelve to sixteen feet in length—never more than sixteen feet. It is well to have two poles to each hill, though it is not generally practiced ; but never should there be more than three vines to one pole, and two is better than three. Select the strongest and best shoots and cut the rest away. Keep the ground free from weeds, and occasionally help any of the leaders as they are running upward, back to the poles, in case high winds or other cause should displace them ; tying loosely with soft worsted yarn is sufficient. Their after management will be discussed in future numbers, in good time. It is the practice of many to plant the spaces between the hills with potatoes or other vegetables ; the practice is admissible the first year, but it should not be done afterwards.

THE AMERICAN STOCK JOURNAL.—We receive this admirably conducted journal regularly. It is one among the most desirable and welcome of our Atlantic exchanges. It is mainly devoted to the interests of the breeders of farm stock, and to such, has become, from its usefulness, an indispensable monthly visitor. The great success that has attended its publication thus far, has induced the proprietor to make several important improvements in the volume for 1860 over the previous volume. These improvements are not merely contemplated, but they are made, and, from the known character of the editor as well as the proprietor, they will be continued. We would urge upon the attention of California stock-growers, the importance to them of possessing this leading and unequalled stock book. It is published monthly. 'C. M. Saxton, Barker & Co., Agents, No. 25 Park Row, New York.

THE BEST MARKET STRAWBERRY.—We are inquired of by a correspondent in Columbia, our opinion of the best market strawberry for California. So far as the experience of all the large growers of strawberries, in the vicinity of San Francisco or the bay of that name, goes to establish the point, we believe there is none other equal to the British Queen. For general productiveness, size and quality, we believe it is without a rival. Its flavor, to our taste, is not equal to Peabody's seedling, Ajax, Ruby or Jenny Lind; nor are we sure it will much excel some of these varieties in productiveness, particularly away from the peculiar climate of San Francisco. Experiment can only prove which are the best varieties for mountain localities.

BITTER BUTTER.—**EDITOR CULTURIST.**—The cause of bitterness in spring butter is the weeds. In our first inhabitancy of California, grass was more abundant and weeds less. Our pastures are running out, from too close and everlasting cropping. We give them no chance to recuperate; we so starve our cattle, that every grain of the oats and burr of clover is licked up; we turn our stock upon the pastures when the first rains come; and we keep them shaving down every blade of green, showing nature no chance. This treatment is destructive to the grass, but the weeds don't mind it; they thrive in despite of it; and now, as blades of grass are killed off, bunches of weeds take their places, and, year by year, the proportion of weeds is increased—till, by and by, it will be all weeds, and our spring butter will be all bitterness. There is a remedy by which the taste of weeds may be remedied in great part, and, in many cases, effectually; but it will not make the butter wholesome. The taste imparted to milk by turnips and cabbages, may be removed by infusing a small quantity of cold water into the milk when it is in the pan; but when this is not effectual, put into the churn half a teaspoonful of saltpetre for, say eight or ten pounds of butter, and in that proportion for larger quantities, and you will deterge the butter of whatever bitterness it owes to weedy pasturage. While we give this medicinal perscription to remedy an evil, we would impress it upon producers that it is merely a means of concealing from consumers the unwholesomeness of the article. They owe it to themselves and to the public to strike at the root of the evil, and this is only to be accomplished by cultivating out the weeds and seeding in the grass. Cheesy butter is not what we call bitter. The peculiar flavor of cheesy butter comes from the staleness of cream kept too long. It is due to a process of decomposition, and it is very deleterious.

ANTHRAX.

MOUNTAIN APPLES WILL KEEP.—To have been fully satisfied on this point, the doubting should have seen a few beautiful specimens of the genuine Rhode Island Greening, raised by J. Bryan, Jr., of Diamond Springs, and in good eating, as well as keeping condition, as late as the twelfth of February. When we shall have found the proper altitude, giving us a climate corresponding with that of Oregon, then may we hope to see the same varieties as good keepers as when grown in Oregon. So far, we believe, every attempt to produce fruit among our foot-hills, at altitudes not exceeding two thousand, five hundred feet, has been attended with complete success; and the future can only reveal, by its yield of delicious fruits, how perfectly the soil and climate of our mountain plateaus are adapted to their production.

CALIFORNIA INVENTION — VALUABLE AGRICULTURAL IMPLEMENT.—Mr. S. H. Rounds has invented and patented an agricultural implement, which he calls a "Seed-Sower and Turtle-Drag," calculated to perform at one motion, the operation of sowing grain or any kind of seed, harrowing it in, breaking the lumps, and rolling or leveling the land. As a California invention, it deserves to be placed before our farmers, who are recommended to give it a thorough examination for the economy and labor-saving principles which it involves. The machine runs on four wheels, of which the fore are of ordinary wagon size, and the hind much smaller. It is drawn by two horses. The seed-sower is elevated about four feet above the ground, in the front part of the machine, and consists of a box, or hopper extending across the width, and running down like an inverted cone. This hopper will contain about six bushels of grain. At the lower part is a roll or barrel, the outside of which is exposed underneath, and is perforated with between two and three hundred holes. The motion of the machine, as it passes over the field, causes this barrel to revolve, and the grain falls, from the holes, upon the ground. In fourteen feet of headway, this barrel makes one-third of a revolution. The amount of grain to be emitted, however, can be graduated at the operation of the driver—from one quart to two bushels to the acre. This part of the invention we saw work with the most perfect success. The crumbling, harrowing and rolling part, is performed by a single process of the most simple description. This consists of a barrel or shaft, forming the hind part of the machine, and attached to it by a stout framework. With the progress of the machine, the roller revolves. It is provided with eleven transverse rows of seven-inch teeth—about the size of those of an ordinary harrow—with ten teeth to a row. These are so constructed, by a simple piece of machinery inside the barrel, that they protrude their whole length as the barrel, in its revolution, brings them toward the ground, and the revolution continuing, they draw themselves in again, when they have reached a downward position, and accomplished their purpose of breaking the lumps and harrowing the ground. The remainder of the revolution of the barrel presents, therefore, a smooth surface to the ground, and acts as a roller. Thus, in the passage of the machine over the field, this in-and-out motion, (like that of the head of a turtle—whence the name) is continually going on, and the harrowing and rolling following immediately after the seed-sowing, there is, necessarily, but one operation between plowing and reaping, as this machine performs at a single motion all the intermediate processes. This constant motion also keeps the teeth clear of all obstructions, such as grass, roots, etc., which are apt to clog them. The machine goes sixty-seven feet ahead for the turtle-drag, or barrel to revolve once. An improvement might perhaps be made in substituting one for the present two wheels, which have so little play (the axletree being stationary) that a large circuit is required to turn in. A single wheel would enable the machine to be turned easily, and in a comparatively narrow space—a manifest advantage in a narrow field. We saw the machine at work yesterday, near the Union race-track, where a large field of grain is being sown. It answered the required purpose admirably, leaving after it a fine, close soil, as if it had been nicely rolled. Its motion is about as fast as an ordinary harrow is driven, and takes about as wide a space. It is labor-saving, economical and strong. Mr. Rounds is an old Californian, and has been long enough in the grain-growing districts of Chile, to fully understand what was wanted. It will soon be on exhibition at the patent depot of Messrs. Wethered & Tiffany, on Market street, near Montgomery.—*Alta California.*

We were on the ground to examine the work done by this seed-sower and harrower, and we pronounce it a valuable and useful invention to the grain-grower. We shall give a further description, and a finely executed, engraved illustration of the invention in our next number.

CHUFAS OR EARTH ALMONDS.—So great is the demand for this newly introduced nut, for the purposes of feeding and fattening swine and poultry, that even in the Atlantic states, it is impossible for seedsmen to fill their orders. A California order has been for months in the hands of Thorburn, which he is unable to fill, and as spring approaches the demand is every day increasing. We simply announce the fact, that a limited quantity can now be procured by sending to us; they will be sold at a rate which seems truly a great price to pay—three dollars a pound; but to those who are sufficiently desirous of getting seed of an excellent quality to commence with, we can assure them that such as we offer are perfect seed. See also, advertisement of C. L. Kellogg & Co., 111 Sansome street; and S. W. Moore, 110 California street, San Francisco.

METEOROLOGICAL TABLE,

For Sacramento, California; being an abstract of Observations made during the month ending January 30th, 1860; Lat. 38°, 34', 41'', N.; Long. 121°, 27', 44'', W. Hight of the lower surface of the mercury, 41 feet above the sea at San Francisco. The observations are made three times a day conformably with the hours adopted by the Smithsonian Institution. The indications of the barometer are given corrected for capillary action, and reduced to the temperature of 32° Fahrenheit, but not corrected for its hight above the sea level. The rainy days are included under the head of cloudy and foggy, and are also put separately to show the number of days on which rain fell during the month. The force of the wind is estimated and registered in figures from 0 calm to 10 a hurricane.

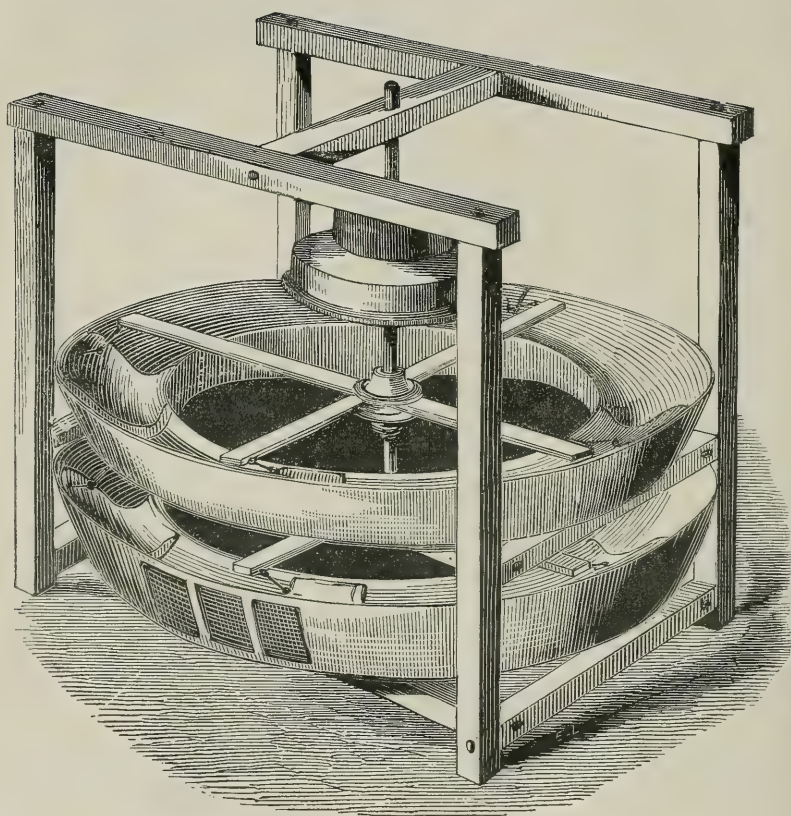
By THOS. M. LOGAN, M. D.

JANUARY, 1860.	7h. A. M.	2h. P. M.	9h. P. M.	MONTH.	AVERAGE OF SEVEN YRS.
Barometer, Maxima	30.366	30.337	30.362	30.366 inches.	— 0.038 inch.
“ Minima	29.823	29.797	29.801	29.797 “	+ 0.204 “
“ Mean	30.162	30.129	30.145	30.145 “	+ 0.001 “
Thermometer, Maxima	53.00	56.00	54.00	56.00 deg.	— 1.85 deg.
“ Minima	37.00	46.00	43.00	37.00 “	+ 3.90 “
“ Mean	41.93	49.84	46.84	46.20 “	+ 0.85 “
Force of Vapor, Maxima .....	.348	.405	.362	.405 inches.	+ .033 inch.
“ Minima .....	.178	.219	.192	.178 “	+ .074 “
“ Mean .....	.232	.282	.271	.262 “	+ .018 “
Relative Humidity, Maxima	93.00	94.00	92.00	94.00 per ct.	— 0.33 p. ct.
“ Minima	74.00	54.00	62.00	54.00 “	+ 10.17 “
“ Mean	85.52	78.58	84.48	82.86 “	+ 1.43 “
Number of Clear Days	13	12	16	13 2-3 days.	+ 4 1-3 days.
Number of Cloudy and Foggy Days.	18	19	15	17 1-3 “	— 4 1-3 “
Number of Rainy Days				6 “	— 1 2-3 “
Quantity of Clouds	4.2	3.5	2.9	3.5	— 2.3
Quantity of Rain and Fog				2.310	+ 0.120 inch.
1st Days and 2d, Force of N. Wind..	14 1.8	11 2.6	12 1.5	12 1-3	2.0 + 5 1-3 — 0.1
“ “ N. E. Wind.	2 1.0	3 2.0	2 1.0	2 1-3	1.3 — 1 + 0.1
“ “ E. Wind.	3 1.7	1 1.0	4 1.0	2 2-3	1.3 + 2-3 — 0.1
“ “ S. E. Wind..	4 1.5	7 2.0	5 1.6	5 1-3	1.7 — 1 1-3 — 0.4
“ “ S. Wind.	4 2.5	4 2.0	3 1.7	3 2-3	2.1 + 1 — 0.3
“ “ S. W. Wind.	0 0.0	1 2.0	1 2.0	2-3	1.3 — 1-3 — 0.1
“ “ W. Wind.	1 3.0	0 0.0	0 0.0	1-3	1.0 0 + 0.2
“ “ N. W. Wind.	3 1.7	4 2.8	4 1.8	3 2-3	2.1 — 2 1-3 — 0.1

Thermometrograph.

	DEG.		DEG.
Highest Reading by day on the 4th	56.00	Mean of all Highest Readings by day	50.87
Lowest Reading by night on the 28th	32.00	Mean of all lowest readings by night	37.81
Range of Temperature during month	24.00	Mean daily range of Temperature during mo.	13.06

REMARKS.—The continuous cold, damp and foggy weather which characterized the early part of the present winter, has at last given place to a more genial state, and the past month has proved exceptional, both as regards temperature and the number of clear days. January is generally our coldest month; but, although the nights have been exceedingly cold and frosty, still the figures in the table show how much above the average the thermometer has ranged, and how many more clear, sunny days than usual have prevailed. In fact, considerable verdure is already to be seen in the surrounding plains, with other indications of an early spring. A prevalence of northwardly winds, however, would soon give a check to such precocious vegetation. The earliest spring we find on our record was 1855. In that year the butter-cup was in profuse blossom on the first of February, and on the twentieth the peach tree was in flower. The prospect of abundant rains, with which the present season opened, is not as favorable as it was at first regarded; as, however, the rain commenced earlier than usual, we may regard the late dry weather as constituting the period of interregnum, which generally prevails in February, between the early and the latter rains. The highest point to which the river has reached was eleven feet above zero on the eighth instant.



WM. BANHAM'S PATENT EXCELSIOR QUARTZ GRINDER,
PULVERIZER AND AMALGAMATOR.

T H E

CALIFORNIA CULTURIST.

APRIL, 1860.

DETERIORATION OF BLOODED STOCK.

WITHIN the last two years, a very great expense has been incurred by many of the best stock-growers in California, in the introduction of high blooded animals of the choicest breeds, including horses, cattle and sheep. These importations have generally been well selected, and success has, in almost every instance, attended their transportation hither; so that now there is no want of genuine blood from which to breed direct full bloods, or cross upon the native herds. It is the opinion of some of our most observant and careful breeders, that no country in the world presents a better field for the breeding of high blooded animals than California; and they base their belief on the general supposition that a mild and equitable climate, free from the extremes of heat or cold, and particularly the latter, cannot but prove highly favorable to the fullest development of animal life in its most perfect forms. It is under this belief that many have imported full blooded animals, of both sexes, purposely to test the capacities of our climate and country for the transmission in full, if not even allowing of an improvement in the blood of the animal. By blood, we simply mean, in this instance, an improvement of the animal form, or a more perfectly developed physical organization.

There are others who believe that greater advantages are to result from judicious crossings of high blooded animals upon our native herds; as likely to produce a stock better adapted to the peculiarities of the climate and food of California, than can ever be obtained by breeding only full bloods. It is undoubtedly the long habitat of a particular district of country by any description of animals and their progeny, that best fits them for its occupancy. It is this that has produced the numerous fine, but distinct breeds of English cattle, and each, to a very great degree, adapted to their own particular district, by certain conditions of climate, soil and food. But it remains to

be shown whether judicious crossings, upon our native stock, will produce for us a better acclimated breed than a closer breeding of higher blood.

There is one fact, however, connected with the breeding of our future herds, to which it would be well if breeders would give more attention. It is the importance that attaches to the proper care and treatment of high blooded animals. It is important to the improvement of any breed of animals, that they receive kind and gentle treatment with a generous fare. It is useless to hope for any great improvement in the breed of animals, if little or no care be taken to protect them from the vicissitudes of climate, food, or half starvation. Attempts have been made in repeated instances, to our knowledge, to rear the Durham short horn upon the same fare that the old New England red cattle thrive upon; but every such attempt has been a failure. The short horn must be better fed, and better cared for, or their progeny will relapse into inferior stock, even though the blood be pure on the part of both sire and dam. In California, there is a general, almost chronic habit among farmers to neglect their stock; very little provision is made, except what nature makes to carry them through the cold, rainy weather of our winters. With only now and then a frosty night, and seldom, if ever, snow, our winters are, nevertheless, cold and damp and really severe upon the more delicate breeds of animals, if no provision is made for their comfort more than is generally the case with our native stock. Such neglect to provide additional comfort, with a generous fare, will of itself work a rapid deterioration of our best bloods.

Already the complaint is heard, that dairy cows, of choice breeds, are rapidly losing their milking qualities. This can be attributed to one of two causes—perhaps both—improper food or climate. We cannot believe yet, that our climate is uncongenial, for a more generally healthy one for horses than California presents is unknown; then why not for cattle and sheep, in their appropriate districts? We believe the fault to lie entirely in the want of care for the comfort of the animal, in not screening it in summer from the intense heat of the mid-day sun, and in the winter from the cold and wet; but more particularly to the parsimonious habit of feeding. Breeders will find, and dairymen will find, that, upon the dried herbage alone, of our summer and winter pastures, the high bred and high fed Durhams of the Atlantic states and England, will deteriorate in more than one of their prime qualities; and what is true of the effect of their food here in summer, applies with still greater force to the winter and spring, when almost all that the animal now gets to sustain nature alive, is a meager bite of unwholesome, innutritious weeds. Nor will the rule apply only to the heavy Durham, but to all our improved breeds of cattle. The causes that induced, and the efforts that were required to establish a high grade of blood, or an improved breed of animals, must be continued, or their progeny will degenerate. Will the stock-growers of our state please give this subject a further and careful consideration; and should the matter of giving our imported stock more care than is at present bestowed upon them, meet their approval, we would be glad to hear our views endorsed by those engaged in stock-growing. An excellent article on this subject, by ANTHRAX, will be found on page 448.

RAISING COLTS.

A PENNSYLVANIA farmer, in the *American Stock Journal*, discourses in this wise on the subject of raising colts: The proper manner of breeding and raising our horses, is fast becoming a subject of national inquiry and importance. Its successful accomplishment is attended with considerable trouble and expense; but when properly attended to, and conducted on scientific principles, it becomes a source of pleasure and profit. Those who may be led by inclination, or compelled by necessity, to resort to this occupation as a means of obtaining a livelihood, or acquiring a fortune, will alike find it a pleasing and profitable pursuit. The present high prices which good horses command, and the annually increasing demand for them, is turning the attention of thousands of our citizens to this subject. How, then, to re-produce and properly develop this most noble animal, is a question of vital importance to our country.

I am well aware that so much has already been written upon this topic, that but little that is new or original can be offered; but still there are some things which cannot be too often repeated, or too indelibly imprinted upon our minds—and among these are the *true* “principles of breeding.” Having been in the business of raising colts for a few years past, I propose in the present series of articles, to give substantially the result of my observations and experience for the consideration of practical men, and not attempt to frame a perfect theory, nor to lay down arbitrary rules for the regulation and observance of others.

The first question to be considered is this: What *kind* of an animal shall I breed? I answer this question generally, by advising the breeding of that kind *best suited to your own market*, wherever that may be. If your locality is where the demand is greatest for slow and heavy draught, breed the kind best adapted for that service; if, on the contrary, the demand is greater for horses of quick and light work, then breed that class, and so on to the end of the chapter. If all breeders were to insist on producing the same kind of animals, the market would soon be overstocked, and the business ruined. But, in this wide-spread country, *all* kinds of horses are needed, and in demand; and therefore, I would say all kinds should be bred. Let each breeder determine for himself, what class of horses is best adapted to his own particular locality and home market; and then set himself persistently at work to produce that class, and his reward will be swift and sure.

Having settled this question, we are now prepared to consider briefly the general elementary principles of breeding. The axiom that “like begets like,” may be safely set down as a grand fundamental principle of breeding. The breeder should adopt it as the golden rule of his faith and practice. This proposition, however, to be justly appreciated, must be properly understood. I have frequently been asked the question, “What do you mean by saying that like will beget like?” The answer to this question is simple and short—offspring generally inherit the qualities of their parents. Hence, if the sire and dam be *alike* in any particular form of body, or trait of character, there is a strong probability that the foal will resemble them in

this particular. And where this characteristic has existed among the ancestors for a number of generations, its future transmission amounts to an absolute certainty. But where the sire and dam are *unlike*, it would be folly to expect, with any degree of certainty, the progeny to resemble either parent. In this case the likelihood will be that it will be *unlike* either parent, but partake of the qualities of both. Here, then, the advantage of understanding and rightly applying this law becomes evident. It not only shows us how to perpetuate the good qualities of particular animals, but it also points out the proper method of still further improving them.

The second great principle of breeding is this: *Breed up*, not down. Always breed up to the higher, purer, nobler race, and never down to the cold blooded dunghill. If there is anything that I have learned by experience, it is the truth of this principle. The difference in the progeny of the same dam, where bred to stallions of different degrees of blood, has been so marked, that I am fully satisfied that a mare should never be bred *below* her condition. The great superiority of the colts raised from the sire of nobler blood proves this conclusively. I am well aware that many breeders will not agree to this; they tell us "blood is nothing, it is *form* that constitutes superiority." While I am free to admit that form is of primary importance, it remains equally true that blood should never be neglected. He who intends breeding his stock for the great markets of our country should remember this; and, particularly, he who intends to breed a stock of horses for the purpose of again breeding from them, should know the *blood of his stock* is of the highest importance; and he who breeds otherwise will be sure, sooner or later, to repent of his error.

It is not necessary to pursue this subject farther at present. In my next article I propose to make application of the established principles of breeding, to the selection of proper brood mares.



SOIL ANALYSIS, OR VALUE OF SCIENCE IN EXPERIMENTING.

WE are enabled, from time to time, to extract from our exchanges an article as well adapted to the careful consideration of the California agriculturist, as though it had been written expressly to meet the conditions of our own peculiar climates. With very many there is a disposition to decry everything like a scientific investigation, or analysis of soils, believing that science, beyond what is displayed in the simple operations of properly plowing, seeding, and the after cultivation of any crop, has but little to do with success. To such unbelievers in the value of scientific analysis, or knowledge of the constituents of the soils, we commend the following plain, matter-of-fact expression of opinion, by Geo. Trowbridge, of Camden, N. Y., in the *American Stock Journal*, for February, to which we append our own views of the importance of a scientific knowledge of the constituents of the soils we cultivate.

"Thousands are trying experiments in various ways, and with varied success. It is from years of such experience that most methods of culture, at present adopted, have been formed. The methods that succeed in one district, fail in another. The

reason for the difference is, to such, incomprehensible. What an immense amount of capital and labor is lost in such experiments! Science leads us in a much more certain path. It ever gives us the best security of success. The causes of failure, or causes of sterility of a soil for a few plants being known, the means of obviating it at the least expense becomes apparent. Certain plants will not grow on some soils where certain constituents are absent. Now, science reveals to us these necessary constituents, which, if absent in a soil, its sterility, and the cause of such sterility, is obvious. Such knowledge is what the farmer wants. It would often save him much capital and labor, and would enable him to employ them in the most advantageous manner. It is well known that the cereals will not flourish in a soil deficient in silica in a soluble state, in addition to the other substances requisite. Virgin soils contain vegetable matter in large proportions, and these have been found eminently adapted to the cultivation of most plants; the organic matter contained in them has naturally been recognized as the cause of fertility. At the same time, even to the most fertile soils, when the weight of the soluble parts of this vegetable matter is compared with that of the plants growing upon it, it is found but a part of their substance could have been produced through its agency, but a large portion of it is received from the atmosphere. This vegetable mold, or *humus*, plays such an important part in the phenomena of vegetation, that physiologists have been induced to ascribe the fertility of the soil to its presence. Hence, manure, supplying this ingredient, is chiefly resorted to. This humus is a product of the putrefaction and decay of vegetable matter. This receives different names, according to the *chemical* properties that it possesses, as ulmin, humic acid, coal humus, and humin. It is well known with scientific men, that the grains and grasses will not thrive, to any extent, without the presence of *humus*.

"It is impossible to stock old or exhausted lands with timothy, clover, and other grasses, without a generous coat of manure, or wood-soil; and, if stocked, it is liable to freeze out during the succeeding winter. To restore humus to the soil, green manuring, or plowing in growing crops of clover, rye, etc., is one of the most economical modes, thus gathering an increase of fertilizing matter from the atmosphere. This mode of treatment was strongly recommended by our much lamented *Buel*, and in my opinion, is one of the very best and cheapest means to apply to exhausted or worn-out soils, to bring them to a state of fertility."

We wish it was possible to convince the California grain-grower, who annually raises his hundreds of acres of wheat and barley, and as regularly consumes his straw-piles with fire, that he is rapidly depriving his soils of the indispensable element, *humus*, and that very soon his now fertile soils will be wholly or greatly incapacitated for the production of the present, though annually decreasing yield of the cereals. Farmers may talk about a rotation or change of crops, as indispensable to a continued fertility of soils, or their ability to produce perpetually. Whilst we admit the propriety of such rotation or change, with a view of deriving the utmost benefit from bringing into play the varied constituents of the soils we cultivate, we as distinctly deny the necessity of such rotation, provided the proper care be taken

to return to the soil, of the cereal crops produced, only that portion of product *not required* as food for man.

To exemplify our meaning further, we assert that we have raised ten successive crops of Dutton corn, upon the same field of land, in as many years, without the addition of a single pound of any other fertilizer than rain-water and all the stalks and blades of corn of the previous crop, plowed under year by year; and the last crop was fully equal to any that had preceded it. A similar experiment, for six years in succession, with the same variety of wheat, upon the same plat of ground, plowing under the entire of the straw produced every year, gave an increase of grain for the first three years, and which was maintained to the last without diminution. The principle we would inculcate, then, is this: that, upon a return to the soil of the stalks, straw or haulm of our corn, cereals, peas and beans as fertilizers, the grain product can be annually taken without deterioration of the soil.

That system of grain-growing, then, that involves the annual destruction of straw by fire, is one that will inevitably impoverish the best lands in the world, unless a system of manuring be practiced equivalent to the loss of the humus supplying ingredients contained in the burned product. It is not enough that we return the ashes of the straw consumed—we want the *humus*, which Graham, in Webster, describes as “pulverulent, brown substance, formed by the action of air on solid animal or vegetable matter. It is a valuable constituent of soils;” and we may add, it is just that portion of such vegetable matter as fire completely annihilates. It is not that we would, in all cases, insist upon a return of all the straw or haulm produced, but it is that, if not the straw, then its equivalent in the *right kind* of manure, and which can only be known by analysis, or a careful study of the nature and constituents of your soils, should be given to it.

MILK FOR OUR CITIES.

WHY is it that so many of the dwellers in our cities complain of the quality of the milk furnished them by dairymen? The fact is glaringly apparent, that by far the larger part of the milk consumed in San Francisco, if set for cream, will not produce more than one-half the quantity that can be obtained from a like quantity of milk from country cows. We say country cows, because, admitting the honesty of our city milk dealers to be above reproach, the fact is clear that cows that give milk for city people, do not try, or if they try, do not give as rich milk as country cows do for country consumers. Now, if the food of city milk cows is equal to that of the country fed, should not the milk be equally rich? But if it is not, in what are we to look for the cause? It must be either in a want of care for the comfort of the animals, exposing them to the influences of undue moisture, or to too much handling of the milk after it is obtained from the cows.

The effect of the exposure of cows to the damp ocean winds of San Francisco and vicinity, is doubtless to completely saturate their bodies with moisture, other than that derived from the more nutritious juices of their food. It is a “law of nature,”

we believe, or an "axiom," that two distinct bodies cannot occupy the same space at the same time. Hence, the impossibility of water-saturated cows producing much milk, and what they do produce, for the same reason cannot contain but little of any oily substance, as cream or butter, because water and oil are known antagonistics. It is offered in apology, that a necessity exists this year for water-saturated cows, upon the same principle as that which governed the man who found himself possessed of a large lot of spring-poor pigs; he had to soak them in water several hours every day to make them hold swill. We accept the apology; for really, we have never before seen in California, as many spring-poor cattle as now; nor do we recollect a year when so much bright, clean straw of the various cereals was destroyed, as was purposely done during last autumn, by fire, and which might easily have been made available as very good animal food.

The injury from too much handling of the milk before it reaches the city, or the consumer, arises, we are satisfied, more from a natural affinity that water has to the inside of tin milk pans, than from any quality really imparted to it by the handling process. Rinsing the cans every day in water, seems indispensable; but, if any plan or device could be discovered, by which they could be afterwards drained of their surplus water, it would be, in these days of blue milk extension, well worthy a patent.

We would now propose a method to obviate the difficulties under which the dairyman prosecutes his business of milk culturist. Instead of allowing his cows, at a season of the year when not a half bite even of the vilest innutritious weeds can be obtained, to ramble for miles daily, exposed to the cold of the winds, if not to rains, he would provide them comfortable shelter and an abundance of food, properly, yet cheaply prepared, even if it be necessary to dispose of one-half of his stock to provide for the other half, he would soon find that a larger profit would attend his operations, with a far less amount of labor. It is not too much to say that the well-fed cow will give double the milk on proper food, that two ill-conditioned and half starved ones will. It is like cultivating too much land; when one-half, properly manured and cared for, will produce a larger yield than double the quantity poorly stayed with. We wish some one of our city dairymen would procure a few tuns of the straw of wheat or barley, of the thousands of tuns annually consumed by fire within sight of the city, and a good straw-cutter, and then, by hand or horse-power, cut fine the straw, steam, boil, or, if this be thought too expensive, simply moisten it with water, and give it a coating by mixing it with the bran of wheat, in preference to anything of a more unnutritious character, with an occasional mixture of carrots or sugar beets, with all the pure water they choose to drink, and then give us the result of the trial.

We do know that this plan of feeding has been practiced upon with admirable success, even in districts where tolerable pastures were cheaply procurable, and where straw was worth double, and the milk but half the price it brings in San Francisco. Soiling, which consists of feeding green food to animals without obliging them to graze for it, is practiced in very many of the dairy establishments of the East,

in the vicinity of large towns, with unvarying success. In a climate like much we find in California, the grazing of our lands, after the middle of July, is but little else than the gathering of the dried-up herbage of the four preceding months; and, though the dried grasses may contain a little more nutriment than the straw of wheat or barley, yet the latter, with the addition of the bran of wheat, is more than equal to the dried grasses for the production of milk; whilst the lessened amount of food required in consequence of the saving of labor to the animal in collecting its own food under a broiling sun, and the additional comfort secured thereby, and the quantity of valuable manure produced and saved, more than compensates for all the additional labor or expense attendant upon this mode of feeding; and we earnestly recommend its adoption to those who have but limited ranges for pasturage.

ITALIAN RYE GRASS.

EACH succeeding year adds its weight of evidence to the proposition, that California must produce, for the support of her annually increasing herds of horses, cattle and sheep, more forage than is now, or can be grown under the present system of pasturage and tillage, from any of the grasses or clovers as yet introduced, or indigenous to our soils. The most valuable of our grasses are almost exclusively annuals or biennials; pasturage, which prevents the annual seeding of such grasses, soon renders the soil barren, or productive only of such weeds as are not eaten by animals. The necessity will soon exist for a much larger supply of green forage in the vicinity of our cities as well as in the country, for the profitable as well as healthy subsistence of our dairy herds.

In a previous article in this number, we have called the attention of stock-feeders to the use of prepared straw as a substitute for green forage, where the latter is not obtainable; but it is now our purpose to introduce to notice, and urge upon the attention of all interested, the peculiar merits said to attach to the Italian rye grass, under almost all conditions of soil and climate, by presenting a few extracts from an English prize essay, which we find in the columns of the *American Farmer*, and appropriate with the editor's introductory; for, should this grass, on trial, prove to be half in value what it seems to be in English soils, it cannot but become a valuable acquisition to our present list of forage plants and grasses.

"The accounts we receive from England, of the extraordinary productiveness of the Italian rye grass, (*Lolium Italicum*) under the high culture to which it is submitted there, may have produced an impression not altogether favorable to the idea that it may be as well suited to any system of good farming here, as to that which, in England, exhibits its peculiar value. For the following account of it we are indebted to a prize essay, written by a student of the Prince Albert Agricultural School, in Ireland. The length of the essay was too great for our columns, but we have abstracted the most material parts, and do not doubt it will prove useful to our

readers who are interested in grass culture, and will induce some of them, we hope, to make a trial of its value.

"History and Introduction.—This grass was brought, as its name indicates, from Southern Europe, where it is native, by the seedsman of the Highland Agricultural Society of Scotland, in the year 1831.

"Climate and Soil.—It has been proved by experience to be equally adapted to a cold and hot climate. Morton, in his Cyclopædia of Agriculture, says: 'Its hardiness or capability of withstanding extremes of temperature is obvious from retention of verdant freshness through winter, as well as in summer droughts, which destroy the ordinary gramineous vegetation—and its endurance of heat and drought has rendered its introduction one of the greatest benefits conferred on the Australian and other tropical and subtropical colonies.' In England, even when sown in September, it not only retains its verdure through the severity of winter, but is ready for cutting at a very early period in the following spring.

The Italian rye grass succeeds well on any soil of medium fertility, from a light sandy to a stiff clay, but a rich loam suits it best. It is, however, chiefly prized for the extraordinary results it yields to high culture, and especially to the application of liquid manures. There are accounts almost past belief, of its yielding eighty to a hundred tons of grass to the acre, being cut eight or ten times during the season. We have not heard of the Italian rye grass having been successfully introduced into this country; but the peculiarities here mentioned, with the high character it has in England as a forage crop, make it well worthy of careful trial on grass lots which may have the benefit of ample manuring, either for hay or for soiling.

"Durability of the Italian Rye Grass.—It is a biennial plant, but like our red clover will sometimes last beyond the second year. It cannot, however, be depended on for a crop after that time. Red clover seed may very properly be sown with this grass, say half the usual quantity, which not only fills up the interstices, but gives a closer soil and a heavier crop.

"Rapid Growth.—Of all the known forage grasses, there is none, except perhaps, the Cocksfoot, (our orchard grass) *Dactylis Glomerata*, which grows so rapidly. Mr. J. C. Morton, in a paper which he read before the London Farmers' Club, states an instance of Italian rye grass, of seventeen days' growth, having attained the extraordinary length of seventeen or eighteen inches, and weighing nine or ten tons to the acre; and, when five weeks old, was from three to three and one-half feet high, and weighed twenty tons per acre. Instances are on record where the growth was found to be two inches a day, the ground being fertilized with liquid manure.

"Liquid Manure.—While very little is known in this country of the use of liquid manure, and it is not likely to be brought into use here for many years, its extraordinary effects upon grasses generally, and upon the Italian rye grass especially, make it a matter of interest to every one who cultivates the soil. The merits and beneficial effects of liquid manure, when directly derived from the drippings of the manure

heap, the urine of the cattle, and the sewerage of the farm-yard, can scarcely be over-estimated. It has been well said to supply the plants with both meat and drink in a cooked state. It is successful on all sides; it is good for all plants; and, having a natural tendency to make soils more tenacious, its effects are perhaps more marked on light than upon heavy soils. To illustrate this, we have only to refer to the success which attends its application on the light soils of Belgium and Holland. It may now be considered to be pretty well established, that land manured by liquid, or liquified manure, retains its fertility in a remarkable manner; and that the effects, instead of being transient, have far greater permanency than was at first anticipated. 'Prof. Way,' says Mr. Mechi, 'has revealed the astounding truth, that irrigated grasses contain twenty-five per cent. more meat-making matter than those not irrigated.' The Rev. A. Huxtable states that, by the application of liquid manure to Italian rye grass, he has been able to keep at least four times as many cattle on the same quantity of land, the *fertility of the land being at the same time increased.*

"*Time of Cutting.*—It may be cut for soiling any time it is twelve inches long until the seed is formed. Nevertheless, the object for which the animal is kept, ought to affect the time of cutting. 'When,' says Mr. Morton, 'it is allowed to stand till on the point of putting forth its seed stem, it is then more substantial food, containing less water and more starch and sugary matter. When younger it contains, along with more water, more of the substances corresponding to the gluten of flour, which chemists tell us resembles the fleshy part of animal matter. Those who wish to make flesh, by their consumption of this grass, may therefore be right in cutting frequently and having it younger. Those who wish to make butter, are right in cutting it less frequently.' It is an important point to know the proper time for cutting the grass when it is to be made into hay, so as to produce the largest quantity and the best quality. Like most other grasses, the saccharine juices are in most abundance when the plant is in full flower, but before the seed is formed. This, therefore, is the best time for cutting it; for, if allowed to stand uncut after this, it has a tendency to get hard; and in course of the formation of the seed, the gluten, sugar and other matter soluble in water, give way to the deposition of woody fiber, which is insoluble in water, and incapable of being assimilated in the stomach.

"*Saving Seed.*—When seed is to be saved, the rye grass should be sown entirely alone. It is allowed to stand about three weeks after flowering; being liable to shed its seed, it should not be allowed to stand too long. It will yield from twenty to thirty-five bushels per acre.

"*Produce.*—The quantity of grass said to be obtained from an acre, under a system of fertilizing with liquid manure after each cutting, is almost incredible. It is cut from six to eight and ten times during the season, producing, at each cutting, several tons to the acre. It will amply repay for any quantity of manuring. Most commonly, however, the grass seed is sown with a grain crop, and perhaps receives no top-dressing afterwards; in such cases, one cutting and an after-math is all that is generally received. Now, eight tons are considered a good crop, and six not a bad

one.. A cow will consume on an average, from nine to ten stones of grass per day ; and, at this calculation, eight tons, or one acre of grass, would supply a cow with green food for upwards of twenty weeks. This estimate is nearer the *general* return than the very large crops obtained under the system of liquid manuring.

“Opinions with regard to the General Merits of this Grass.”—The general opinion in its favor has increased in a ratio with its diffusion and cultivation. The following statements indicate the general opinion of its value :

“‘The Italian rye grass is remarkable for the small quantity of useless matter ; the large proportion of soluble carbonaceous substances, and the moderate proportion of albuminous constituents. This valuable grass has not obtained an undue reputation.’—*Scottish Agricultural Almanac*.

“‘Those who have paid attention to the cultivation of Italian rye grass think highly of it. This grass grows more rapidly in spring than any other, and is so much relished by cattle, that they scarcely allow a single stem to spring up.’—*Rham’s Dictionary of the Farm*.

“‘It is an important fact, that however rank and luxuriant the Italian grass may grow, all animals eat it with the same avidity as they would the youngest shoots, and it never has the effect of scouring them ; but, on the contrary, they thrive better upon it than upon any other description of grass whatever.’—*Andrews’ Modern Husbandry*.

“‘The Italian rye grass forms almost the only food of the dairy cows in the highly cultivated districts famed for the production of Parmesan cheese. * * * * All animals are particularly fond of it, whether as green food for soiling, as hay, or as pasturage.’—*Dairy Farming*, p. 82.

CALIFORNIA PORTABLE HAY PRESS.

HERE is another purely California invention, and one which promises to be of real utility to the farmer engaged in putting up hay or straw for distance transport. The merit of the invention lies not only in its peculiar mechanical construction and mode of obtaining the requisite power by compound windlass ; but equally in its portable or locomotive character. The entire press takes the form of an ordinary strong farm wagon, with a body say twelve feet in length, three in depth, and from four to six feet in width, depending upon the size of the bale it is desired to make. The body of the wagon is opened or closed at top as required, by movable, sectional coverings, upon suitable hinges. In the center of the box is placed the follower, that by an ingenious arrangement of windlass and lever, is made to traverse alternately backward and forward as the hay is put in, and the coverings closed down ; by this movement a bale is deposited alternately at the fore and hind end of the wagon, dropping through a trap-door upon the ground.

The great advantage of this press over any other, is its adaptation to locomotion ;

a single pair of horses is attached to it as to a common wagon; it is taken to the field, and whilst being drawn along beside the winrow, or hay cocks, or heaps, the hay is thrown in, and when a sufficient quantity is obtained, the lever is put in motion, and at once the bale is ready for binding; this done, it is dropped through the trap door, and the wagon or press moves on; hay is again thrown in, the follower passes to the opposite end, and another bale is ready for binding. The invention saves the entire cost and trouble of gathering the hay in its loose state into stacks or barns, previous to being pressed; the inconvenience of procuring annually the unwieldy press, now so much in use, and often transported from place to place at great trouble; and no little cost is also saved. Altogether, it is an invention that we wish some maker of agricultural implements would take hold of, give us a first-class machine of its kind, and we are satisfied, from seeing the model, that another useful and valuable agricultural implement or machine, would be added to our already extended list. The working model can be seen by calling on the inventor, Dr John McCarty, at the soda (glass) factory on Fourth street, four doors from Folsom.

WILLOW HEDGES.

WITHIN the last two years a few speculators, and very many practical farmers, have "located," or purchased of the state, thousands of acres of tule lands, with the view of their ultimate reclamation for agricultural purposes. It is not our purpose here to discuss the value or adaptability of such reclaimed lands for grain or stock-raising; for we believe this point is already settled beyond a doubt. It is clear that vast tracts of these now utterly waste lands will be speedily reclaimed. An important feature attendant upon such an improvement, will be found in the kind of fences to be adopted as barriers against the ingress of animals, and the general security or protection of farm crops, orchards, etc., against the prevailing, strong, summer trade winds.

Ditches and hedges will, at no distant day, become the prevailing fences throughout large districts of these lands; because they possess qualities that no other kind of fence can in their peculiar locality. The ditch alone is quite an effectual barrier, and is not easily destroyed; whilst the hedge is self-restoring under proper management. After repeated attempts with the various hedge plants of other countries, upon the low, moist soil of reclaimed tule lands, it is the opinion of many that nothing better than the native willows will be found for hedging in such moist soils. That the *Salix*, in some of its varieties, will make a very good hedge we do not doubt, because they already exist, and we learn that extensive experiments are in progress to further test their relative value as compared with the Osage orange and other well known hedge plants or trees.

There is one objection said to obtain in reference to willows for hedging: it is that they are often infested with a species of ugly caterpillars, so numerous as often to extend to the more valuable, cultivated products in their vicinity and to their injury.

It is also thought that the cut-worm, so injurious to the vineyards of Los Angeles, had something to do with the growth of the willow used for divisions and fences ; because their effects are more apparent in the immediate vicinity of the willows than at distances from them. It would, therefore, be well to obtain the opinions of those who have had some experience with the willow for hedging, before extensively setting it for the purpose. For the benefit, however, of those who have resolved upon growing willow hedges, and we are acquainted with three or four who are making preparation so to do, we extract the following from the *Prairie Farmer* upon this subject.

"Some months since, I saw an illustration of willow hedge, and, subsequently, an article recommending the *Salix purpurea* as the best of the several varieties of willow for hedging purposes, in the advertising and editorial columns of the *Prairie Farmer*.

"I fully concur with the editors, that willows are suitable for hedges on wet soil, to piece out fences across sloughs or otherwise ; and hedges properly trained and formed, on low prairie and marsh land, make excellent break-winds, as well as contribute much, especially with a Lombardy Poplar every ten or twelve yards, to vary the monotony of straight lines, and give relief to the eye by variety ; as well as useful timber, in a few years, to the improvement of the farm, both in value and appearance.

"Having some willow hedge, as well as a large bed of *purpurea* and *triandrus* willow, in a flourishing state, and having seen something of the experience of others with willow hedges, I will now offer a few suggestions as they occur to me, on this subject.

"It is quite true, the *purpurea* will bear cutting back well, for it has been the willow used for basket work, or the principal osier ; and has, therefore, been annually cut off close down as practicable, for, perhaps, a century, in localities suitable to its growth in England, France and Germany ; and there is no doubt whatever, that it will make a strong fence, notwithstanding its erect form of growth. The latter is, perhaps, the only objection to it ; for it grows fast—is easily trained or managed, and will therefore form a hedge in three or four years, which is quicker than any thorn hedge can be produced.

"The diamond form, in which the illustration alluded to above consisted, has some objections. A hedge requires, in all instances, to be thick, and therefore strong in the bottom. If it be not thick, it will neither keep down weeds by preventing the access of light to them, nor offer sufficient resistance to stop some sorts of stock ; and must, therefore, be inefficient as a fence. If trained in the diamond form, the sap ascends as high as possible, and sends out shoots and branches at the points where the original diamond work crosses, and at the *top*. The bulk and force of the sap being expended at those points, but few shoots appear at the *bottom* of the fence, and it consequently becomes or remains thin, precisely where it should be thicker than at any higher point. In fact, all the shoots in this sort of hedge, should branch out *down to the ground*.

"The true way is to set two rows of cuttings, in well prepared soil, about twelve or fifteen inches apart, and on the break-joint plan, and they should be eight or ten inches from cutting to cutting in the row. They will throw up four to eight shoots the first year, if well put out and kept clean. These may be all cut off, except a small one or two that spread next the ground; and the second year, *all* may be cut off without fear of killing the root. This should be done early in the spring, or more properly, in February, of course. After reaching this stage, the management may vary according to taste or design.

"When all parts of a hedge are let grow, or rather restricted to the same hight, the next set of shoots, and consequently the thickening of the hedge, is at the point less trimmed or clipped; and the hedge, by this means, also gets thin at the bottom. This fact led, many years ago, to the system of slashing, or cutting off each side or row, of the double rowed thorn edge, alternately, in some parts of England. When both sides reach the hight of five or six feet say, and both have been clipped on the outsides, one row, or half of the hedge will make a pretty fair fence; hence, the other half is cut off as low down as possible. A mass of young shoots soon appears and keeps the bottom of the hedge thick with new growth. When these attain a sufficient growth, the other side is cut down, and so on in alternate succession. Thus, the bottom of the fence is often being renewed, and kept continually thick and strong. This is a great advantage over having to cut the whole hedge off at one time at the bottom, as would certainly be necessary, when it had become thin and dead there, by reason of the annual new growth being higher and higher each succeeding year. Now this plan is applicable, and for the same reasons, to the willow as with the thorn hedge. The engravings given in some of our books and periodicals, are very pretty to look at, but they offer no means of, or reasons for renewal, when this becomes requisite, and therefore not the best guides.

"Willows are much more easily handled than thorns, of course. Another plan, a modification of the foregoing, might therefore be adopted with the osier or willow fence. This might consist in cutting off all the branches on alternate stocks as low as practicable in each or both rows at the same time. And, on account of this rapid growth, once in three years would be none too often to repeat this process. This could not be effected with the same rapidity, nor with long-handled tools, as in the case of cutting an entire row at the same time, but the fence left would probably both have a better appearance and be really more substantial the first year after each cutting down for the purpose of renewal.

"Two or three summer trimmings, and one in February are necessary, independently of the renewing processes we have been discussing, for the purpose of thickening the hedge all over its outside; the renewal or slashing system being, on the other hand, intended to thicken it all through its lower part. The surface trimming gives a close and strong appearance, but the periodical renewal of the base and middle parts of the hedge gives it much more real strength and power of resisting the encroachments of stock. With both systems combined, a fence that will appear well and be very strong may be raised, and one that will continue those advantages through many years may be secured by renewal as often as it may be necessary."

VINEYARD CULTURE.

EDITOR CULTURIST:—I have had a slight attack of the prevailing vineyard epidemic; I have set an acre and a half with grape cuttings of several varieties; I have given them a distance of six feet apart in the rows, and the rows eight feet apart. Others in this vicinity are also planting cuttings, and some of them quite extensively; and I notice that, in most cases, they are setting, or preparing stakes for setting, five feet in length above ground, one to each cutting. Now, sir, it has occurred to me, that if the practice of pruning, recommended in previous numbers of the CULTURIST, is to be followed strictly—that is, if the vine is to be cut back to two or three buds in the spring of the second year, or one year from this time—that there can be really but little necessity for stakes this year; and if not, then when they are set, they will at least last one year longer than if set now. The question, then, is, can I dispense with the trouble and expense of stakes for the first year?

PLACER COUNTY.

MOUNTAINEER.

Certainly you can; for really, there is but little use for stakes, either the first or second year. The only benefit derived from them is in securing to the vine an upright growth. For this purpose, it is the practice of some to use, for the first two years, a much smaller sized stake than will be finally required for their support—say two feet in height—which is abundantly high to give proper direction to the vine for two years, when they are removed and larger ones substituted permanently. For these shorter stakes, much smaller wood can be used, making it easier to tie the vines to, than to larger ones; besides they can be very rapidly set; on being sharpened at bottom, two or three blows with an ax, will give them a sufficient hold of the ground for all purposes. Train the vines to the stakes to the height you intend to prune back to the following spring, and all above that may be allowed to drop downward and trail upon the ground without detriment to the vine; but with a positive advantage, in all dry situations, by the increased shade and consequent moisture of the soil. By this method, a two years' service of the permanent stakes can be saved, an item of consequence in many parts of our state.

SULPHATE OF SODA.

AMONG the more recently introduced manufactures, adding to the wealth and convenience of our citizens, and creditable to our state's enterprise, is the manufacture of a superior article of sulphate of soda. The principal purpose to which it is applied at present, is the manufacture of glass. Only the most ordinary success attended the first experiments in glass-making in this city, principally on account of the difficulty of obtaining suitable materials; and, among these, the most prominent was a suitable article or quality of sulphate of soda, which enters largely into the manufacture. Many are aware of the existence of what are known as the acid

works at the Mission, where nitric acid is manufactured for the United States mint, in this city, and for the further demands of commerce.

Nitric acid is manufactured from nitrate of soda, which is obtained for this market principally from Chili. In the manufacture of acid, therefore, there is left a residuum in large quantities that, until the recent manufacture of sulphate, was of no value whatever, being entirely thrown away. This residuum is a bi-sulphate of soda with excess of acid, and from this is made, by a process of refining, a beautifully pure article of the sulphate of soda. With this product our glass-makers find no difficulty in manufacturing a superior article of glass. The manufacture of the sulphate is conducted by Dr. John McCarty, at his works on Fourth street, four doors from Folsom, and his establishment is well worthy the attention of all who may feel an interest in the progress of manufactures in California.

CATTLE FEEDING.

EDITOR CULTURIST.—We greatly approve your out-spoken rebuke of the stock raisers of California. Their neglect to provide sufficient food inflicts cruelty upon the cattle, and will bring poverty upon themselves and loss to the nation.

You have left unmentioned one chief cause of the scarcity of pasture. The principal grazing in Mexican times was in the valleys. These afforded grass during a great portion of the year, when the hills are bare. Now, encfencement has shut off this source of supply; and it is out of the question that even a tithe of the former number of cattle can be supported. Nor can any cattle at all be kept in proper condition upon hills, that are in fair pasturage for only a small portion of the year, and which are annually running more into weeds for want of tillage. Making hay of the wild oats is another destructive innovation. By cutting the crop while it is green, there is scant seed for the renovation of the crop. The cattle men of our state will have to prepare for a change of system. As the American system displaces the Mexican, there must be a corresponding change in the manner of herding cattle. Under Mexican customs, the wild oats of the hills were allowed to ripen, the superior attraction of the valley grasses in spring time keeping the cattle away; so that stock were usually fed, through the dry season, upon *ripened* oats standing where it grew. It is well known that the berry of oats does not shell out here as in the states—a provision of Providence nicely adapted to the purpose of preserving the crops for summer feed and for autumnal seeding.

Now, all is changed. This providential provision for the peculiar wants of our dry season is withdrawn by our own counteraction. And we must look for a substitute without delay, or disaster will befall us. If we would continue to raise cattle, we must provide against the out and out despoliation of pasture, which is going on with terrible rapidity. A law to prohibit the trespassing of wandering herdsmen upon private domains unfenced, would just now be unpopular. But it seems as if the force of circumstances must work a change in public sentiment. The squatter

habits peculiar to California work all to our eventual impoverishment. The people help to feed us, it is true; but they pay no land taxes for the support of government; they impoverish the land and leave it beggared of value. They kill the goose that would else have continued to give us golden eggs. So long as this class of men continue to occupy our pastures, the cattle-raising resources of our state must year by year diminish, and at last become exhausted. There must be, in some one, ownership protected by law, or there can be none interested in saving our pastures from annihilation. This salvation can now only come from cultivation. The ground, bereft of grass and beset with weeds, must be ploughed and re-seeded, if we would restore its capacity for stock feeding. And it should be a national care that the stock-raising capacity of a state be, not only protected, but encouraged to increasment.

It is astonishing how the down-trodden soil of our barren-looking hills is transformed into fertility, by simply stirring the surface. Even a change of seed, from oats to barley for instance, tells like a coating of manure. This change of seed has a double effect as against old-seated weeds, because the growth of the changling seeds runs ahead of the unchanged weeds and chokes them out. In no country are the recuperative powers of man, beast and plant so conspicuous; in no climate is the care of life so well repaid by healthful growth. On this very account life runs out sooner. Its full race is more quickly accomplished, and its seeds demand more frequent renovation. In nothing is this shown more clearly, than in oats run wild. It is a law for everything that lives, though in some directions it may not be so marked to the eye. Wild oats have run out their profitable round, and we may put other grasses instead. Alferea, wild geranium and bunch-grass, if cultivated, would give us pasturage greatly superior in lasting nutritiousness. When well established in growth by spring rains, they maintain their verdure through into August. The most profitable reflection of agriculturists to-day, is how to prolong pasturage and to increase its volume. We can but give starting points and hints in the compass of a periodical contribution, and we earnestly pray that others will give us further counsel.

There is an unwritten mischief of deep national import, which attaches to scant feeding and the merciless winter exposure of our stock. Fine cattle, noted for delicate meat and rich cream, came, in the first place, from generous care and judicious crossing. However fine these qualities, they cannot endure continued neglect and rough usage. When forced into hardihood, battling for life, meat toughens, sinews enlarge and tenderness is chased away. The fanciest breeds then run into common stock. Place in the wilds a man or a woman, delicately brought up, tender handed and of wooing attraction. Let them have to grub for subsistence, and let that be scant—how soon their softer traits depart; and, speaking physically, the once tender-loined would make the toughest kind of pork. It is all idle waste to be importing stock, carefully nurtured into fine meat and wool-making qualities, and thus wantonly to run them back into their original wild estate. We are making mistakes in this matter, which will cost us dearly.

Our suburban milkmen lose what would be their best profit by skrimping their

cows. During the greater part of the year our grazing ranges yield insufficient food. Our cows are put to the hardest work to glean a scanty living on the embrowned hill-sides of our dry season. In even rich pastures, three-fourths of what the animal eats goes to its subsistence. It is from the last quarter that we get our profit. On this account, a very little hand-feeding, in the rest of evening, will readily double the yield of milk, counting quality at its worth. For hand-feeding there is nothing like the sugar beet in this climate where it flourishes and keeps green perennially. With wind-power cut up your oat-hay and roots—soak the hay and mix for feed. Give this care to your cows, and you will find preference in the market and money in the pocket.

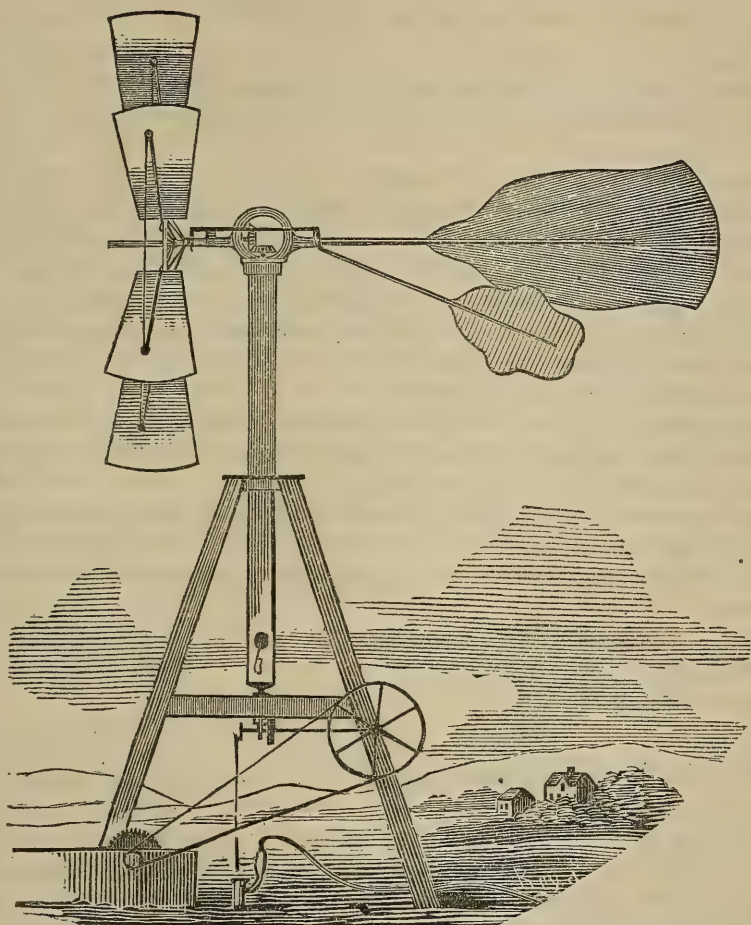
ANTHRAX.

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NAPOLEON'S WAR HORSE.—Everybody has seen a copy, in some form, of the famous painting, "Napoleon crossing the Alps," and everybody doubtless remembers the noble looking white horse in the fore ground, which bears upon his back the young general of the army of Italy, who leans upon the neck of his rearing steed, and points to the long lines of soldiers climbing by tortuous paths the steep and rocky passes of the Alps. This horse is not a mere artist's ideal, but was intended as a portrait of Napoleon's horse Superb. This beautiful animal was a light gray Arabian, about fifteen and three-fourths hands high, slightly, but compactly built, possessing remarkable intelligence and great muscular power, combined with a nervous, active temperament, and a strong, vigorous constitution.

Superb was a great favorite with Napoleon, and accompanied him in many of his most successful campaigns. In 1813, during the disastrous retreat from Moscow, he was captured by the Russian general Orloff, who kept him at St. Petersburg till 1834, when he was presented to the father of M. Tourmiaire, then manager of the imperial circus, a passionate lover and accomplished trainer of horses, and well known for his devoted attachment to the memory of the great Napoleon. Gen. Orloff, in presenting the horse, said, "Jacques Tourmiaire, you were greatly attached to the late Emperor of the French, and your attachment honors you. You are known to be a favorite of horses; and, satisfied of the care he will receive at your hands, to you I confide this, my greatest favorite. Superb is too slight for my use. I have grown too heavy for him. To sell him to a strange master is a fate to which I cannot think of subjecting him. To you, therefore, I intrust him; and, as you loved him to whom he first belonged, you will, I am sure, cherish Superb for the memory of his owner, as well as for his own sake." The horse was well cared for by his new master, who brought him upon the stage, and taught him to perform some light parts in pieces performed in the circus. Jacques Tourmiaire died in 1839, and left Superb to his son, who treated the veteran still with the tenderest care. He was subsequently exhibited in London and other large cities. Several years since, we read a short history of this horse, published in an English journal, and, if our memory serves us well, it was stated that he was foaled in 1802, and died in 1841, having lived to the extraordinary age of *thirty-nine* years.—*American Stock Journal*.





PHILIPS' SELF-REGULATING WIND POWER.

WE here present a wind-wheel, which is acknowledged to be perfectly self-regulating—a desideratum that has occupied the attention of mechanics for many years. It has been tested here as well as in the Atlantic states, for the last four years, in pumping, and the propulsion of all manner of machinery, and in every instance has proved to be all that is claimed for it—a perfectly self-regulating wind power. Large numbers of these wind-wheels are in use in Benicia and vicinity, and give entire satisfaction. They are manufactured by Hyde & Storer, Benicia. For additional facts in regard to the value, simplicity and excellence of this wheel, see advertisement in our addenda.

### GRAPE SOILS—THEIR RELATIVE VALUE.

EDITOR CULTURIST:—I have been seeking for some time, for information with regard to the adaptation of different soils to grape culture; and, knowing it to be an object of general interest, I have concluded to seek information through the columns of the CULTURIST.

1st. The relative value of all our wine-producing soils, at least so far as they have been tested; the quality of the grapes from those soils, and the quality and quantity of wine made from those grapes; and, more particularly, I would like to know something of the adaptation of the following soils and localities, for the wine-producing grapes. Loose, clayey loam, depth from six to ten feet, gradually merging into clay, mixed with gravel, is very fertile, and retains moisture sufficient to mature corn and garden vegetables to perfection, and in which fruit trees promise well, but have not yet fruited—location, level bottom.

2d. Sandy loam, underlaid with gravel, possesses natural drainage, is devoid of irrigation, except from capillary attraction, and yet possesses moisture and fertility sufficient to mature corn and superior succulent plants.

3d. Whether the foot-hills, or first elevations from our river bottoms, are capable of producing superior wine grapes.

4th. What varieties of grapes are best adapted to the above mentioned soils and localities.

Hoping to receive the desired information from you and your experienced contributors, I remain yours respectfully,

THOS. J. BIDWELL.

HEALDSBURG, March 19.

In regard to the relative value of our wine or grape-producing soils, we believe it is now admitted by every one that the uplands will produce a better quality of grapes for wine, than can be produced from the same kind of grapes grown upon our low, river alluviums. That such alluviums may produce, in some cases, more wine is not doubted; but the day is not distant, when the value of a California vineyard will be measured, not so much by the quantity of wine produced, as by its quality. A loose clay loam, such as our correspondent describes, would undoubtedly produce a large crop of grapes; but we never should expect to make a very superior wine from them; and, if in a district of country subject to late spring frosts, should expect greater injury to the vines in such low situations—particularly if inclined to surface moisture—than though occupying the uplands.

The soil described under the second head, would undoubtedly prove an excellent one for wine grapes, particularly if, to some extent elevated, and not exposed to the cold, raw, ocean winds. If thus exposed it is useless to expect to grow fine grapes, without artificial protection. There are very many excellent soils in California, in localities where the climate will not admit of their profitable culture; thus, care and judgment, in this regard, are highly necessary in the selection of vineyard sites.

The third query of our correspondent can be answered unhesitatingly in the affirmative, provided the soil contains sufficient moisture, is ordinarily fertile, and the climate congenial.

As to the varieties of grapes best adapted to particular soils and localities, in California, it is at present impossible to determine, so far as regards their value for wine. There are certain varieties we know are superior to others for raisins; but when we come to talk about wines, we know nothing positively; for it must be remembered that, in the best wine district of France, a very great difference is found in the quality of the wines from the same varieties of grape, produced upon only opposite sides of the same hill, and even from the same side, but at different altitudes. Thus, we can see at once the difficulty of arriving hastily, at any positively correct conclusion, in reference to the best grapes for wine, in the varied soils and climates of California, or even the one district of our correspondent—the Russian river country.

We would here remark that, in the queries of our correspondent, we see the advantage that might accrue to grape-culturists, if they would give the result of their experience with the different varieties of grapes in their respective soils and climates, through the columns or pages of any agricultural journal with an extensive circulation in all parts of the state. It could not but inure greatly to the interests of all concerned in wine-making, or about to embark in the undertaking; and we hope our friends and patrons everywhere will for this purpose avail themselves of the pages of the CULTURIST.

### A CALIFORNIA WORK ON BEES.

WE continue our extracts from Harbison's forth-coming work on bees, because the season is now upon us, when the facts and hints it contains will be of service to many a novice.

**QUEEN NURSERY.\***—The other half of the brood combs, in which are principally eggs and young larvæ, together with the remainder of the store comb, is to occupy the original hive, after the verticle queen nursery is arranged as follows: Take a comb and choose that portion of it in which eggs, and a small portion of newly hatched larva is found, and with a knife, cut out a section, as shown in plate —, figure —. *H* is the section, and should be cut three inches long, and one and one-quarter inches wide; the ends are cut beveling, to form supports for the piece of comb which is to be re-inserted with the mouths of the cells downwards or vertically. *I* is a space of half an inch, made under it by cutting away a portion of comb, giving room for developing queens in a perfectly straight and natural position. Two of these sections should

\*Patent number 26,431, dated December 13, 1859: was granted to J. S. Harbison, of Sacramento, California, for an improvement in bee hives. I claim placing the bee comb, known as worker cells, in a horizontal, or nearly horizontal position, so that the cells shall be vertical, or nearly vertical, instead of horizontal, by the means, or their equivalents, substantially as set forth and represented.



be arranged in one comb, and two combs so prepared ; a store comb is first placed on one side, and these two combs prepared as above, placed next to it, and the balance of the brood and store combs next to these in a compact manner ; an empty frame is added, and a cloth reaching over the top and down the sides, to the bottom of the frames, is covered over as shown in the plate.

**THE BEES TO BE DIVIDED.**—The bees are now to be equally divided between the two hives, and the glass frame and honey board put in their place, the hives closed up, and the apertures arranged for the egress and ingress of the bees. The hives are then to be placed, the one on the right and the other on the left side of where the original one stood, and may be placed within a few inches of each other.

**EVENING THE BEST TIME.**—This primary divide is best performed in the evening, about one hour before sundown, yet it will do at any time of day. They should be watched for the first few hours that they fly, to see that a proper proportion of them enters each hive. If more are found to enter one than the other, move the one that most enter further away, and the other nearer to the place where the original hive stood. If this still does not effect the object, close the entrance of the strong one for about two hours, and force the returning bees to enter the weak one. When the apertures are again opened, a board or cloth may be placed so as to change the appearance of the one receiving more than its share of bees.

**BEES COMMENCE TO BUILD QUEEN CELLS.**—The bees now finding themselves without a queen, but in possession of the means to rear young ones, quickly commence to enlarge and build downwards a number of the cells containing eggs, at the same time the young larva is supplied with a quantity of whitish matter, called Royal jelly, which is of a slightly acid, pungent taste, and is different from the food on which the common brood is fed. These royal cells are sealed, a part of them on the sixth, and the balance on the seventh day from the time of forming the nursery ; when the cells are finished, they present the appearance shown in plate —, figure —. *J* is the queen cell, and *k* is a worker brood emerging. The queen cells are straight, and occupy a pendant position ; the queens are larger, more perfectly developed, and a greater number are reared by this method, than when the colony is left to rear them, as shown in plate —, figure —. *I* is the queen cell, being built outwards and downwards, so that the young queens grow in a curved position. This being an unnatural shape, the queen is not so large or well developed as when raised in straight cells, as previously shown. Where new built comb, having eggs in the outer range of cells, or where eggs are next to an aperture, then the bees build straight queen cells, as shown in plate —, figure —. *E* are the cells ; these are good, but it is seldom that so fine a specimen is found. The only danger when cells are built on the edge of the comb, is their liability to suffer from a chill, which retards them, and in many cases, entirely destroys them. This danger is avoided by the vertical nursery being arranged so that it occupies the center of the cluster of the bees, by which means a chill is avoided. The bees never move an egg from one cell to another, for

the purpose of development; hence, it is obvious that they will not always be in a position suitable for straight cells, unless so arranged by the bee-keeper. This plan is found to produce as finely developed and prolific queens, as if raised vertically to supply natural swarms.

## HORTICULTURAL PRACTICES.

BY J. J. JOHNSON.

EDITOR CULTURIST.—With both interest and profit I have carefully perused the arguments of Mr. Flint, in your March number, on the tap-root question; but, whilst I cannot but admire his sagacity in argument, I must be allowed to say that I think he has not fairly met the question. In your February number, I took occasion to point out the locality where trees had been grown to orchard size, and are now bearing abundantly, in the place they had occupied in the nursery row, having never suffered removal. I also desired to be pointed to a locality where the reverse of this can be shown; that is, where trees grown from the seed, without removal, were unproductive, or produced only “sappy, spongy wood, destitute of fruit spurs.”

Now, in showing up an instance of this kind, Mr. Flint, instead of naming a locality where such an instance is apparent, points to the McMurtry orchard, in Alameda county. Now this, I say, is not fairly meeting the question; for this orchard, which appears from Mr. Flint to be but illy inclined to produce fruit, was planted out after the usual mode of transplanting from the nursery row, with the usual destruction of the tap-root, and were not planted and grown from the seed in the places they now occupy, as I had proposed. I say it is not fair to instance an orchard grown upon his *own plan*—proving unproductive—in proof that one grown upon *my plan*, must necessarily be so. I think, too, there may be a possibility of some mistake in regard to the trees of the McMurtry orchard possessing the tap-root at all. It is generally supposed, by the advocates of only surface roots for trees, that to destroy the main tap-root at transplanting, effectually prevents its after formation. Now, if this be true, the McMurtry orchard has no tap-roots, and its want of productiveness cannot be attributed to them.

On the other hand, some contend that nursery trees, on removal to the orchard with loss of the tap-root, are supplied by a renewal, in the form of two or more smaller, in the place of a single large one. Now, if this be true, then the greater part of our orchard trees have tap-roots after all, and in the main, are the most productive of their respective varieties the world can produce, for early and extreme fruitfulness is characteristic of California fruit trees. I repeat it then, that, if all California orchards reproduce the tap-root or roots after removal from the nursery, running deeply downward, then no serious objection can be made to them, which is just our position. If they have not such roots, then there is no fairness in bringing up an orchard, grown upon the removal plan, as proof against one grown from the seed in place, when we point to trees grown upon this plan as an undisputable success.

The other instance of the baneful influence of the tap-root, Mr. Flint produces from his own grounds. He says: "I have cleared on my grounds, a piece of land that was covered with a dense growth of oak; where the trees were thick the timber was tall, with a few branches on the tops; such trees had tap-roots with scarcely no side branches, etc. Other oaks which grew in isolated positions, branched low with wide-spreading heads, having also large and evenly distributed roots near the surface, running over a large space, but destitute of a tap-root, or merely an apology for one." Mr. Flint then says: "Now apply these two conditions of culture to orchard practice, and what is the result? The first of a flag-staff habit, and when subject to gales of wind, resembling a lever; its top a weight at the end, with the ground as the fulcrum. Does such a tree present a favorable aspect for fruit-growing? Is it in reach of the pruning knife and fruit basket?" etc., to which I answer, certainly not; but who, pray, has ever advocated the growing of an orchard in a forest form; on the contrary, even Mr. Flint gives preference to the tree grown in open ground, which is just the position I have always maintained, of growing the tree from the first, in open position rather than in the nursery or forest style. And if this style of tree—grown in open ground—is "destitute of a tap-root, or has merely an apology for one," as Mr. Flint says, then the objection to trees grown in open positions from the seed in isolated positions, as being more likely to grow the "baneful tap-root," has really no existence, in fact.

In conclusion, Mr. Editor, allow me to say that, whilst I have always been upon the side of those who believe in the suppression of the tap-root, in all countries of abundant summer humidity or surface moisture, as a superfluous root, I am here as decidedly of the opposite opinion, and that nature is everywhere teaching us the right lesson, if we will but observe it. Even BAYARD TAYLOR, in speaking of the beauties and peculiarities of the flora and fruit trees of California, refers to the tap-root in this wise, in his description of the beautiful grounds and pomological gardens of A. P. Smith, Esq., of Sacramento: "Mr. Smith related to me a curious fact with regard to the habits of fruit trees in California. Seeing that the young trees thrived without interruption during the long summer drought, he was led to examine them closely, and discovered that every plant makes it the first business to send down a straight, slender tap-root, until it reaches the stratum of moisture. Having once accomplished this, it feels secure, and devotes its energies to the visible portion of its body. I saw a pear tree, three feet high, which in one summer had thrust a tap-root *six feet* straight down into the earth, and no thicker than a knitting-needle! All plants appear to change in this respect."

If it be true that plants change their habits on being introduced here, may not a change in their mode of culture and management be desirable and even necessary to meet the peculiarities of soil and climate? This is a question that has considerably engaged my attention, and I believe not without profit. All gardeners are aware how certainly trees and plants will extend their roots—as if by intuition—towards the soil most congenial or suitable to their wants, if within reach. I do not believe the downward or tap-root an exception to the rule.



## ART, SCIENCE AND INVENTIONS.

**RECOVERING LOST GOLD.**—Gold is among the heaviest of metals, and yet is of such a ductile character that it may be beaten into leaves so thin as to be blown like the down of the thistle. It is found in almost every country, yet it is only under certain circumstances that it can be worked with profit. In California and Australia it has been found in nuggets and scales, and these have been so abundant as to yield large returns to the miners. It is also associated with quartz rocks, as its matrix, in those countries, and in such quantities as to yield large returns for crushing the rock and securing the metal by amalgamation. Long before California came into our possession, and before its immense gold fields were discovered, we had gold mines in Virginia, North Carolina and Georgia, from which the precious metal was obtained from auriferous quartz. These mines are still worked, and by a scientific discovery, for which a patent was issued to Professor T. M. Fell and Mr. J. N. Wykoff, in the month of July last, they are destined to yield three times the amount of gold that was ever before secured by the old processes.

It is well known that some of the richest gold quartz does not present the appearance of gold. It is clear and white, and it is only by crushing, washing and amalgamating it with quicksilver, that the amount of gold contained in it can be known and obtained. This shows that the gold is disseminated through the rock in a very finely subdivided condition, and the question naturally arises, may not a great quantity of this metal be washed away in water, owing to the particles being so fine as to float and remain suspended? To this we return an affirmative answer. By the invention alluded to, the *tailings*, and what has been called "the refuse of gold washings," have been operated upon, and more gold taken therefrom than by the first treatment, when all the gold in the quartz was thought to be secured. By the new process, the ground quartz is submitted to the action of heat, water and agitation in connection with mercury; and quartz, from which about from three to four dollars of gold per ton were taken out, has yielded an average of fifteen dollars. This process is now in operation at the Melville gold mines—about twenty miles from Fredericksburgh—in Spotsylvania county, Va., where it can be seen and examined. By it, some ores of gold, which, by the old processes, had not yielded any precious metal, have been worked successfully. Thus, from one pound of ferruginous sulphurets of gold, as much as one grain of gold and half a grain of silver have been reclaimed. The leading idea of the invention is the bringing the mercury into such intimate connection with the fine gold by minute dissemination throughout the amalgamating vessels, as to touch all the particles, however fine, and combine with them. By such a method of treatment, gold quartz which has been held unprofitable to operate, may now be made to yield good returns; and the sands which abound in many parts of our country, where no gold was ever thought to exist, may yet be made to yield large profits for working.

Gold is found, in small quantities, in most countries; it is sometimes mixed with iron pyrites, copper pyrites and galena; but it is generally disseminated in veins

through quartz rocks, and it is among these that it is principally sought. It is true that gold is obtained by washing the sands of rivers in Africa, Hungary, and some other countries, and no doubt the sands of many of our rivers, especially the mixed, black ferruginous and quartz kinds, contain it in considerable quantities; but, by the old methods of washing and amalgamating, it would not pay to operate them. By the new method, however, these sands may be ground and operated with success for their gold, and we have seen some samples of such, from which, we were assured, more than fifteen dollars per ton had been reclaimed. Here is another spacious field for operation, during the year 1860, to increase the yield of our precious metals.—*Scientific American*.

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WHERE THE COLD COMES FROM.—The Smithsonian Institute, through its extended system of meteorological observations, has been enabled to make some very curious investigations respecting the three memorable cold days of January, 1859. It was found that the cold of the three days above mentioned, swept progressively over the country like a wave, coming down from the Arctic regions and first entering the territory of the United States, at the extreme north-west, among the Rocky Mountains. It was experienced at Utah some three days before it reached the banks of the northern Mississippi, and was heralded by telegraph at Minnesota some two days before it reached Washington. At Buffalo it was some hours in advance of Boston, and was felt last on the Atlantic ocean, where it appears to have vanished. This cold wave also swept south in a most remarkable manner, and progressively appeared in Florida and other southern states, and Mexico; and the last pulsations, as it died away in this direction, were experienced in Central America, and among the West India Islands. Taken all in all, it was one of the most remarkable meteorological phenomena ever noticed, and the facts collected seem to prove that the originating impulse came from the extreme northwestern portions of the American continent.

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THE VICTORIA BRIDGE.—Before the great Victoria bridge, at Montreal, was accepted of the contractors, it was put to the severe test of a loaded train weighing the enormous load of one ton to a square foot, which it was difficult for three powerful locomotives to drag along. While in the first tube only, the deflection of that tube was seven-eighths of an inch, the adjoining empty tube being lifted in the middle three-eighths. The load being placed half over both tubes, the deflection was the same in each—three-fourths of an inch; and when run wholly upon the second tube, the result was the reverse of that in the first. The final test was on the long central span (three hundred and thirty feet) where the deflection was only one inch and three-eighths. In no instance was the deflection greater than five-eighths what it was expected.

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HOW A TOAD PULLS OFF HIS PANTS.—A writer in the North Carolina *Farmer* tells the following: "About the middle of July, I found a toad on a hill of melons, and, not wanting him to leave, hoed around him. He appeared sluggish, and not

inclined to move. Presently I observed him pressing his elbows against his sides, rubbing downward. He appeared so singular that I watched to see what he was up to. After a few smart rubs, his skin began to burst open straight along his back. Now, said I, old fellow, you have done it; but he appeared to be unconcerned, and kept on rubbing until he had worked down all his skin into folds on his sides and hips; then grasping one hind leg with his hands, he hauled off one leg of his pants the same as anybody would; then stripped the other leg in the same way. He then took his cast-off cuticle forward, between his fore legs, into his mouth, and swallowed it; then, by raising and lowering his head, swallowing as his head came down, he stripped off the skin underneath until it came to his fore legs, and then, grasping one of these with the opposite hand, by considerable pulling, stripped off the skin; changing his hands, he stripped the other, and by a slight motion of the head, he drew it from the throat and swallowed the whole. The operation seemed to be an agreeable one, and occupied but a short time."

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**INDIA-RUBBER TOOLS FOR MACHINISTS.**—Mr. Thomas J. Mayall, of Roxbury, Mass., who has long been engaged in the enterprise, has succeeded in producing a composition, the basis of which is india-rubber combined with emery, from which are manufactured files, emery wheels, grind-stones, hones, razor-strops, scythe-rifles, knife-sharpeners, and a variety of other articles of like nature. The files wrought from this new composition can be molded into any desirable size or form, and adapted to every variety of mechanical business in which the common rasp and file are employed. They can be made as rigid as the steel file, or as flexible and elastic as the original gum which forms the basis of the invention. Emery wheels and grind-stones are wrought from this composition, of every desired shape and size, from the coarsest grade of emery to the finest buff wheel. In point of economy, the new composition is superior to any of the implements which it is destined to supersede, since the articles made from it are serviceable until the material of which they are composed is entirely worn away. It possesses the virtue of repelling oils and solvents. Of the great variety of useful and ornamental forms which india-rubber, through the skill of the inventor, has been made to assume, this is regarded as the latest and most important application. This composition has been perfected by a new process and principle discovered by Mr. Mayall, and we learn that the rights of the discoverer have been duly secured in the United States, and in all the nations of Europe.—*Boston Journal*.

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**TERRIFIC HURRICANE.**—The neighborhood of Calne, Scotland, was on the 31st of December, visited by one of the most destructive storms ever witnessed. It appeared to have a curvilinear motion, and progressed at a rapid rate. Symptoms of an approaching storm were visible at one o'clock, P. M. The whole atmosphere became thick and heavy. It was so dark that it became scarcely possible to read without artificial light. Presently, the vault of heaven was lighted up by vivid flashes of lightning, accompanied by loud and sudden claps of thunder, which,



together with the big hail stones falling thick and fast, and the roaring of the mighty wind, produced a scene at once awful and sublime. At Blackland Park, belonging to Mr. Marshall Hall, the destruction of property was immense. Part of the roof of the lodge was blown away. Hundreds of trees are lying on the ground, and it is a remarkable fact, that trees, eight and ten feet in circumference, were snapped in sunder like match wood; while others, especially heavy topped firs, were blown into a neighboring field across the turnpike road. At Cherhill, whole ricks of wheat were carried away, and some of the sheaves to a great distance. A large tree fell across a shed and cut in two a large wagon it contained. Several cottages were blown down, but not a man or beast was killed.

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**ANTIQUITY OF MAN.**—Modern researches have pretty conclusively proved that the origin of man has a far greater antiquity than has ever yet been assigned to it by any received system of chronology. Authentic relics of both human remains and human art are now frequently found in the diluvian drifts, both in Europe and America; while the discoveries of human fossils have so multiplied of late years, and have been found under circumstances so unequivocal, that the fact of their existing can scarcely be denied by any, except such as resolutely refuse to believe anything, which has the appearance of militating against their own preconceived notions. The fossil remains of man have often been reported from the earliest periods of geological research; but, until within a few years, they have been treated with a degree of neglect, which could only be superinduced by religious or educational prejudices.

A fossil skeleton, found a few years since in the shist-rock at Quebec, was thrown aside with the most incredulous inattention. It was the same way with an entire body found at Gibraltar, which was blown to pieces by gunpowder with the surrounding rock, by the laborers of the garrison, because the officers would pay no attention to it, although a scientific traveler was present, and called especial attention to the discovery. Undoubted human fossils have frequently been found in caves in various parts of Europe.

The lower valley of the Mississippi has recently furnished some most unequivocal proofs of the great age of man. The workmen engaged a short time since in excavating the foundation of the gas-works at New Orleans, came across a skeleton of a man, at a depth of sixteen feet, directly beneath the roots of a cypress tree, which grew on what is known to be the *fourth forest level* from the surface. Each of these levels, it has been very clearly shown by competent authority, must have occupied about fourteen thousand years in the process of formation, which would give the age of the skeleton, even if it had been deposited at the very close of the fourth period, forty-two thousand years! The age of the Mississippi delta cannot be less than one hundred and fifty thousand years, as is proven by unerring geological data. There are cypress trees now growing on that delta, which are five thousand, seven hundred years old—nearly the entire age of man, according to Usher's chronology. This is proved by counting the rings of annual growth in a section of the body of the tree. Excavations have proved that there must have been at least ten successive generations of these trees, which have also alternated with other forest growths.

**THE CLIMATE AND RESOURCES OF MOROCCO.**—Morocco is called by the Arabs, “the land of the extreme west,” from its position in Africa. Its territory is about five hundred miles long by three hundred and seventy-five miles wide, intersected from south-east to north-west by the chain of the Atlas mountains. The climate is very hot during the months of June, July and August—the rainy season continues from September to April. Much of the year, however, the climate is pleasant and agreeable, and the winter is frequently interrupted by intervals of fine weather. The soil of the country is fertile, and yields three crops in a year. Indeed, such is the productiveness of this empire, that if it were well governed, and proper encouragement given to agriculture and commerce, it could supply all Europe with wheat, barley, rice and maize. In some portions, tobacco, cotton, saffron and sugar cane are cultivated. Pastoral industry is most pursued however, the Berbers and Chelloks devoting themselves to it almost exclusively. According to the latest accounts, supplied by the European consulates, the live stock of the country comprises 500,000 camels and dromedaries, 400,000 horses, 2,000,000 mules and asses, 5,000,000 cattle, and 50,000,000 sheep and goats. These statistics, which are not far from the truth, show the resources of the country.

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**AFRICA.**—Dr. Livingstone has sent home samples of cotton and cotton yarn; the sample of cotton is excellent, but the most surprising, is a ball of yarn, spun by the natives, weighing sixteen and three-fourths ounces, the cost of which is one foot of calico, or one penny. The yarn is very strong and well spun. The cotton was grown in the valley of the Shire, and is very abundant. The navigation of the Zambesi and the Shire is open to the center of this cotton valley during a great portion of the year, and Dr. Livingstone deserves the support of the government and his countrymen in developing the resources of the regions he has opened to commercial enterprise.

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**TREES.**—The Japanese have a custom, uniformly observed among them, by which every man leaves on his grounds as many trees as he finds. Hence, in Jeddo, the forest city, some groves covered several acres, and were in the most perfect state of nature; in other places were to be seen neat houses, finely shaded with gardens and ornamental shrubbery, trimmed into fanciful forms of every description.

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## PLANTING SORGHUM.

**A**N inquiry comes to us about planting sorghum, or Chinese sugar cane; the kind of soil best adapted to its growth, time and mode of planting, its culture, its relative value as a forage crop compared with the natural grasses of our lowlands, its probable yield of sugar, or sirup to the acre, and where good seed can be procured.

Any description of soil in which corn can be grown to perfection will produce good sorghum. In California, there are many soils that produce an excessive growth

of corn-stalks, often from fifteen to twenty feet high, with but a small or very inferior growth of ears. Varieties of corn that have not this habit in the Eastern states, assume it here. This is a highly favorable habit in regard to sorghum; the stalk is just what we want rather than the seed, and nowhere have we heard of a better growth than in a few localities in our own state. Stalks have been produced in abundance, twelve feet in height, and, owing to our long continued summer sunshine, the juices are found to be of the richest kind—the stalk yielding its saccharine product in the greatest abundance.

There is hardly a river alluvium in the state that would not be admirably adapted to the growing of sorghum. Prepare the ground precisely as for corn, and plant at the same time you would corn, in rows four feet apart, and the hills two feet apart in the rows, allowing three stalks to each hill. One experimentist says, three feet apart each way, running the cultivator both ways, which leaves the hand-hoeing and weeding but trifling; he would have four or five stalks to each hill. Under our perpetually brilliant sunshine, more stalks or canes can be grown to the acre, fully perfected in their juices, than in the Eastern states, where clouds and rain prevail so much of the time. The summer culture should be precisely as for corn or broom-corn, keeping the surface mellow and free from weeds.

As a forage crop, it probably has not its equal if properly managed. For this purpose it should be grown differently; the rows should not exceed three feet apart from centers; whilst the seed should be drilled, and as near as three inches, or even a little less, will not be too close to grow the canes—the object being to get a much larger number of canes to the acre, but smaller in size, as being better adapted to feeding. In all cases, however, the canes for feeding should be cut in a straw or stalk cutter, in lengths about equal to the diameter of the canes. Very many feed the canes whole with excellent success, but to cut them is better, and fully pays the expense.

The yield of sirup is seldom less than three hundred gallons an acre, and often reaches five hundred gallons in favorable seasons. As a home product, requiring but ordinary skill in its manufacture, we know of nothing that promises a better return for the labor required, inasmuch as that the season in which the sirup making is performed, is one of comparative leisure to the California farmer. In the culture of the cane, particular care should be had that no broom-corn is grown in its vicinity, as it mixes easily in the blossom, which greatly deteriorates the seed for further production. This fact readily accounts for the lack of the saccharine principle in canes of the second and third years growth in certain localities, leading to a belief that a change of seed is particularly necessary in growing this product to perfection. A change of seed is only necessary where it has been rendered impure by being contaminated with broom-corn contiguously grown. We expect to hear good accounts of the sorghum crop of 1860, in California. Our correspondent can obtain seed of S. W. Moore, 110 California street; of C. L. Kellogg & Co., 111 Sansome street, or of J. R. Ray, 106 J street, Sacramento.



## PLANTING POTATOES.

EDITOR CULTURIST:—Please allow me to say a few words to my fellow-laborers of the soil, about planting potatoes. I know there are many who believe they can learn nothing new to their advantage, about raising corn or potatoes, or indeed, any of the ordinary farm crops; but I find that, though I had entertained very much the same opinion for years, I have made a discovery of importance to me, and may be of benefit to others. I have always, till two years ago, practiced upon the old plan of cutting my seed potatoes, and planting them say about three inches deep; for, in all good potato soils, they will vegetate at this depth better than if covered deeper. Year before last I cut my potatoes as usual, meaning to have two good eyes to each piece, in all except enough to plant two rows across my field; for these two rows, I just cut good sized potatoes in halves; and, as I commenced planting them, it occurred to me—I don't know why—to plant them deeper than usual; so I gave them a covering of about five inches. These two rows were cultivated, in all respects, like the others; they required, of course, a little more weight of seed in planting, but the result was a yield of a little over one-fourth, in favor of the deeply covered rows.

Here, then, I found a matter worth looking into; for, was it the greater depth at which the seed was covered, or was it the mode of cutting the seed in larger pieces than formerly, that gave the increased yield. Last year I renewed the experiment; I planted my potatoes—some whole, some in halves, and some cut to one and two eyes only in each piece—and covered all six inches, except that I covered a few rows of each description of seed after the old plan of shallow planting. Now for the result: A large part of the finer cut seed, covered six inches deep, rotted in the ground; that portion cut in halves,\* in a very few instances rotted, but only a few—the bulk of the seed grew finely, and produced a better yield than either the whole potatoes, or halves, or finely cut, planted shallow; but the whole potatoes, planted six inches deep, gave the best yield of any, and largely more than enough to compensate for the extra quantity of seed required. My soil is alluvium, inclining to clay or adobe. This fact about growing potatoes, in a California soil and climate, I have learned, not from books, but from my own experience.

BODEGA, March 20th.

AN OLD POTATO-GROWER.

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It is doubtless very true, MR. POTATO-GROWER, that you made your discovery, *not from books*, but from your "own experience;" but, sir, have you ever published your experience in any newspaper in the state? Do you intend so to publish it? If not, how could our more than two thousand subscribers ever have obtained the information you now impart? And, though *you* did not, will not *they*—our subscribers—all of them obtain the information from a book, or an agricultural journal, which makes a very desirable book, when, at the end of the year, we bind your volume of the CULTURIST, free of charge? And is the information you impart any the less desirable to those who may profit by it, because obtained from a book? Your

experience, passing to the pages of the CULTURIST, becomes what so many seem determined to detest, that is "*book-learning*," as applied to farming, or raising potatoes. And so it is; but, after all, it is just that kind of learning—founded on experience—that, could we obtain a great deal more of it, would prove of infinite value to the agriculture of our state. We want the practical experience of our farmers, miners and mechanics, upon all subjects pertaining to their vocations, and as in your case, MR. POTATO-GROWER, we will take the responsibility of making "*book-learning*" of it, for the benefit of our patrons.

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### DISEASE OF BEES.

EDITOR CULTURIST:—I wish to call the attention of persons interested in the cultivation of the *honey bee* to a disease, known as "*foul brood*" or "*diseased brood*." This disease is more to be dreaded, because more fatal, than worms, and all other enemies and diseases of bees combined. I regret to say that the above disease now exists to a large extent in California. It was brought into the state, and in connection with several apiaries too, in the fall of 1859; but, during the importing season now drawing to a close, large numbers of swarms, having the disease, have been brought to the state and sold to innocent parties, who were wholly ignorant of the malady, and who must inevitably suffer more than the loss of their money.

It would seem that some of the principal bee-keepers in the infected districts, in the Eastern states, have emptied their apiaries upon the unsuspecting speculators and purchasers of California. Hundreds of her citizens have paid their money for bees that are vastly worse than useless, as they will cause expense, and will, in some instances, infect and destroy stocks heretofore healthy. The purchasers will neither realize the return of their money, nor establish healthy apiaries, until the whole stock is extirpated, and an entire new one introduced from healthy districts. But few bees, to my knowledge, have been imported, during the past winter, from the states where that disease does not exist. I have been called upon to examine bees, by parties who have purchased of various importers; also some reared from previous importations, and have found large numbers affected with the disease, in all its various stages, from the partial or suspended state to the most virulent form.

Most of the swarms brought out early last fall and winter, then strong and in the best apparent condition, are now nearly dead, or dwindled down to a mere handful of bees, and the balance will soon disappear also. If the disease would develop itself immediately after its introduction to the hive, it would soon run its course and disappear. But such is not its character; as it will sometimes appear, and owing to some counteracting cause, its action will be suspended for a time, and then reappear with the return of the exciting causes. Hence, when only a limited number of hives in a large stock have it, there is good reason to believe that others will in turn take it, even after the lapse of months, or even years.

This disease affects the pupa principally, but also the general health of the full

grown bees, to a greater or less extent. The new sealed brood die in their cells, and are suffered by the bees to remain and rot, giving out a most offensive effluvia that is easily perceptible on opening the hive. It is from the effects of this disease principally, that so many bees *swarm out* and desert their hives entirely, and *not* from the loss of the *queen*, as is generally supposed; for *no queenless colony will thus leave, but remain till they gradually die out*. The propensity to swarm out is mainly confined to a particular season, which is the early spring. After the principal breeding season arrives however, they will adhere tenaciously to the hive, although very badly diseased, or destitute of honey; on opening and examining the combs of such hives, the cause of desertion is readily determined.

The chilled pupa remain entire, without giving off noxious effluvia, and the bees can remove them as soon as it is discovered; but the foul brood is generally suffered to remain without being uncapped; the putrid remains of the pupa pass off in exhalations through the pores in the capping of the cells. This process goes on slowly—probably requiring not less than five or six months to exhaust them. The foul brood may be known by the capping of the cells: those containing dead are of a darker color and slightly sunken; while a chilled brood has the cappings of the cells raised almost invariably. When cells are found capped, but, on opening them, are empty, it is a sure indication that the *disease exists*, either in an active or dormant state; it being seldom that old capped cells are found resulting from any other cause. All the principal authors agree that the disease is contagious; that honey carried from diseased hives, will communicate the disease to those receiving it, although previously healthy.

Remedial experiments have been tried by various writers, but with only temporary success. Mr. Langstroth says that, to remove the bees into new hives, and supply them with healthy comb, they will thrive and appear healthy during that season; but, in most instances, the disease reappears in the following summer.

There has thus far been no remedy discovered to entirely cure the disease; hence, the only safe plan to be pursued is, as soon as a hive is discovered to have it, either burn or bury the whole thing—hive, comb, bees and all. No hive that is weak or deserted, should be permitted to stand where other bees can have access, so as to carry off their stores. All honey not known to have been taken from healthy hives, should be rejected for feeding purposes, and sugar used in its place. If all bee-raisers will persevere in destroying every vestige of this disease as above recommended, there can be no doubt but that it can be eradicated from this state, and the business of bee-raising placed on a sure and permanent basis.

SACRAMENTO, March 23d, 1860.

J. S. HARBISON.

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THE BEST NATIVE GRAPES.—The Grape-Growers' Association, of Hartford, Conn., at a late meeting, decided by ballot that the Diana, Hartford Prolific, Isabella, and Concord, were the highest estimated, and also held position as they are named.



## BEES—ARTIFICIAL HONEYCOMB.

A FEW days since, we called on J. V. Hoag, a skillful bee-culturist of Yolo Co., and were shown some beautiful specimens, of his own manufacture, of what he calls, "artificial comb." We think it might, with more propriety, be termed the superstructure of honeycomb, than comb; because it is, after all, but the commencement, or formation, upon or to which the bees attach their newly made comb. It is made of pure beeswax, and resembles just that portion of a honeycomb which makes the division between the inner ends of the opposite ranges of cells. We are probably understood, but will further specify, by supposing a piece of honeycomb, four inches by eight, to be set up on edge; now, if all the cells on both sides containing honey were scraped off with a sharp knife, there would still be a thin partition remaining. This partition, made artificially, for purposes of which we shall speak, is the "artificial comb."

It is not merely a sheet of wax, as thin and smooth as paper, but is so moulded—for it is cast in a mould—as to present the peculiar indentations and protuberances that exist in all such divisions when made by the bees; for it must be understood, that though the cells are on opposite sides of this division, the individual cells are never exactly opposite each other; but the centers of the cells on one side will be opposite the point of union of three cells on the opposite side. The reason why bees put their comb together in this way is doubtless to give it greater strength; for the same reason that the thin sheet-iron, with which houses are built, is crimped, or waved. Be this as it may, the "artificial comb," when introduced into a hive, of any of the "movable frame" varieties, presents to the bees a perfect superstructure upon which they immediately proceed to build, and always much sooner than though an open, barren frame without comb had been offered them.

One great merit of this "artificial comb" is this: If, in early spring, a central frame is removed and its place supplied with one furnished with the "artificial comb," the bees will immediately proceed to build brood comb, the queen supplies it with eggs, and an earlier colony is propagated than would otherwise have been. Another advantage in the use of the "artificial comb," is that of inducing the bees to make their comb regular and true on the frames, instead of running crosswise as they sometimes do, making it difficult to draw the frames without injury to the comb and bees. The "artificial comb" is a German invention, and in the hands of a skillful apiarian, possesses more of merit than we are at present able to explain. Mr. Hoag is probably the only apiarian in the United States, who has taken the trouble to obtain from the inventor or his successor, in Germany, the moulds for making the "artificial comb." We have some specimens of Mr. Hoag's manufacture, which we will be happy to show to any who may feel interest enough in the subject to call on us.

## RAISING CATTLE AND PASTURAGE ON THE TULE.

EDITOR CULTURIST:—Since there are millions of capital invested in stock-raising in this state, and in many instances, during the last two winters, splendid fortunes have vanished, like a dream from the dreamer, and what is worse, “the end is not yet;” there is a question involved, and it resolves itself into just this: What are the capabilities of the state for raising stock? At present, it must be admitted that they are but about one-half equal to the amount of stock; but how stands the matter for the future? The answer to this, upon a certain contingency, is most satisfactory. Drain the tules, and we will have an abundance of good pasturage, and better than California has yet had; for, on the highlands, grass grows only five months in twelve; in the tules, as they are, it grows eleven months, and by draining them, grass will grow upon them all the year round. The grass on the undrained tule, to be sure, is coarse, and not so nutritive as it is on the highlands; but this is remedied as soon as the second season after it is drained; it then becomes sweet, tender and nutritive. This is owing to the grass changing its character, in consequence of the change in the condition of the soil; for the grass does not die out as it is supposed to by many, for its tenacity of life is wonderful, and as soon as the change by drainage is complete, the transformation, I firmly believe, is into red-top grass, or something very much like it, and full of red clover.

Should this fact prove generally true as regards the drained tule, what better surface diggings—gold or silver—can we ask for, than the numbers of fat cattle, butter, cheese, etc., which these inexhaustible tules will produce to us? It don’t matter by what name you call the grass, we know this beyond a doubt, that drying the tules, sweetens the grasses and makes them more nutritive and tender.

The next practical question is, What will it cost to drain the land so as to make it in the highest degree available? To drain a section of land at a time, or one section alone, will require four miles of ditch, or twelve hundred and eighty rods, which, at one dollar and fifty cents a rod, would be one thousand, nine hundred and twenty dollars, or just three dollars an acre. Such a ditch would be five feet wide by four deep. The original cost per acre being one dollar, to which add about twenty-five cents for survey, and the cost of the land, ditched and drained—which ditch and bank is an ample fence—will be four dollars and twenty-five cents an acre. This calculation can be relied upon, as our ditches, so far, have not cost us that sum. But you will please bear in mind, that when four sections are surrounded by ditch instead of one, the cost per acre of ditching is reduced from three dollars an acre down to one dollar and fifty cents an acre.

There are a number of people who are seeding the undrained tule land with red-top, timothy, and wild oats, which is perhaps well enough, even though, in some situations, the land is half the time under water. I think it would be well, however, for such as are doing it to bear in mind that these grasses, if they grow, will ultimately degenerate, turn sour, or run out. It will be a much better plan for such to save their seed, as its cost will half pay for drainage, and when this is done, a per-

manent improvement is affected. I would not recommend another plan either, that some are pursuing—that of draining the land and then seeding to grass without previous cultivation of the soil. It is a tedious and uncertain way, and the seed has too much to do to “root out” the tules and wild grasses.

There are two plans, then, for making very good pastures of tule lands. One mode is the improvement of the natural grasses by drainage, without any working of the soil; the other and better mode is by reclaiming the land first, by ditching and a thorough burning of the whole surface, and then sowing grass seed. This latter plan is the safest, the most time-saving, and the best paying; for it costs but little or nothing to burn over the ground—twenty-five cents an acre will do it—and, when it is done, open the sluices, let in the water, and leach the burnt ground, and without further preparation of the soil, sow your seed, and a fair crop of grass or hay can be obtained the first season. This plan, though the best, has one objectionable feature; it is that stock must be kept entirely off until the burnt ground gets firm enough for cattle to walk upon without poaching it, as this would greatly damage both the smoothness of the surface and the grass.

It would be well for those about to purchase a stock, tule farm, to keep an eye to shelter, as it is very important. A belt of timber on the north and west sides, in this district of the state's tule country, can hardly be dispensed with; but if it cannot be had on both sides, let it be on the west, if possible. It is astonishing to see what a difference there is between cattle that are wintered under the partial protection of a belt of timber, and those that are kept on the open tule; but in the worst situations on the tules, cattle do better than on the bleak hills, with their scanty winter forage. Mr. Editor: In my article on Raising Hogs on the Tules, you made me say that the pigs should be taken from the sow, at the age of “six months;” it should read “six weeks.”

THOMAS CUBBINS.

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### CHERRY TREES FROM SEED.

VERY many who have attempted the raising of cherry trees from the seeds or stones, and particularly if imported from abroad, know how difficult it is to induce their germination; hardly one in ten will grow with the ordinary management they receive, or indeed, with any management, after suffering the drying ordeal to which they are almost necessarily exposed, when packed in the usual manner we find them for transportation. Our object in what we now say is, to propose a method by which such cherry seeds as are grown in California, may be induced to vegetate with more of certainty than has ever obtained by the usual processes of keeping the seeds or stones through the winter, before expecting them to vegetate.

It is not unusual to see the plan recommended of keeping them in sand, or slightly moistened soil, from the time of eating the fruit to planting time; indeed, this has been the only really successful practice. But we would now propose, that the seeds be planted immediately, or very soon after they shall have been taken from the fully



ripened fruit, in soil adapted to their immediate growth, as regards moisture, warmth and fertility. The stones require cracking; then the other conditions of growth being properly observed, they can be relied upon for a very fair growth before the autumn frosts.

Whenever we have advanced anything new, as regards the propagation or cultivation of any horticultural or pomological product, we have a cotemporary, of high old renown, that almost invariably pitches into us for what he calls "theorizing," or stepping out of the old-fogy stage, and taking a seat in the more modern built car of progress; whether he will do it in this instance, remains to be seen; but if there is any one incredulous enough not to believe that cherry stones that were grown last year in California, and immediately after the ripening of the fruit, were planted, and from these seeds trees were grown, that before winter were from eight to twelve inches in height, and now again in fine growing condition, let him call on J. L. Sanford, nursery tree and fruit dealer, San Francisco, and he can be satisfied on this point. We are in a country of anomalies, as regards much that pertains to vegetable growth, and many of our practices in the science of horticulture, may be alike new or anomalous.

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### INQUIRIES AND ANSWERS.

**EDITOR CULTURIST:**—During the last winter, I procured a variety of fruit trees from three different nurserymen, all of them, I believe, of established reputation and reliable. That the varieties will prove true to their names, I have no reason to doubt; but I hear a great deal said in the **CULTURIST**, as well as in Eastern agricultural journals, of the advantages of having trees branch or limb out low down. Now, of the trees that have been sent to me for two-year-old trees, a large proportion of them are beautifully straight bodied, particularly the cherry and pear trees. Hardly one of them has the appearance of a limb within three feet of the ground; above this, they are well supplied with limbs; indeed, they seem to have been grown precisely upon the "flag staff" plan, spoken of by Mr. Flint, in the March number, though without the tap-root. Now, from what you have heretofore said about the difficulty of getting trees to branch any lower down than the limbs already formed with a year's growth the start, I judge I may have difficulty in getting them to limb out as I would desire them to—at eighteen inches from the ground, for apple and pear, and for cherry trees, three feet. My cherry trees are six feet or more in height, without a limb. What can I do with my trees to secure my object? Will you or any of your correspondents answer?

NOVICE.

CAMPTONVILLE, March 16th.

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We will: your trees have not been properly cultivated, however "reliable" the nurserymen may be of whom you purchased. They have been grown too close together in the nursery row, and were not cut back at the end of the first year's

growth, down to the point at which you desire the trees to limb out. We have always advocated and practiced the growing of nursery trees far more open, or at a greater distance apart in the nursery row, than is generally practiced, purposely to effect the object desired by our correspondent, that they may throw out their first set of limbs low down, which they will never do when planted closely. You can hardly hope for anything more than here and there a straggling limb, below the limbs that are now a year old, unless you cut the whole tree down to that point. Your cherry trees, even if set in open ground, will, in all probability, make another straight shoot upward, from near the present top, perhaps two or three limbs; but nothing like the desired low, bushy head will you get, without at once cutting it back to within four or five buds of where you would like to form the head, or top. You may hope they will grow to please you without this apparently knife-mutilation, but you will hope in vain.

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EDITOR CULTURIST:—I have been trying to find some preventive for borers, to keep them from injuring my trees. Thus far, I have not been successful. Last year I lost quite a number of fine-looking apple trees, and it seems almost impossible, even with constant watching, to prevent these pests from injuring trees the first year or two after they are set out. The borers here attack all kinds of trees—apples, peaches, cherries, pears seem alike subject to their ravages. I have been informed that “Oil Soap,” or “Oil of Soap” can be used as a preventive. I am not acquainted with this article. It is said that it has something of the consistency of paint, and that, by applying it to the bark of trees once in two or three weeks, it prevents the flies laying their eggs, and thus, without injury to the tree, saves them from these great pests. As I suppose you are anxious to get all the information possible, about borers and preventives for them, I do not hesitate to trouble you with these inquiries. It is my opinion that an ounce of prevention is better than a pound of cure, if a preventive can be found. Will you please inform me if such an article can be found, and whether or not it can be used to advantage? Truly yours,

IOWA HILL, March 27th.

C. B. TOWLE.

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Oil of soap is a liquid compound, obtainable of almost any of our chemists; and is principally used for extracting grease or oils from cloth garments. To the bark of trees it would prove a stimulant, without being an injury; whilst the odor of the essential oils it contains, would doubtless be offensive to insects, and perhaps to a degree that would make it a preventive against the borer. Grease or oil is injurious as an application directly to the bark of trees; but the oil of soap, as compounded, is more like strong soap-suds in its effect upon trees, and always beneficial. It is often applied to rose bushes, grape vines, etc., as a preventive of the attacks of the aphid. It can be procured in this city at two dollars and fifty cents a gallon. Coal tar, obtainable at the gas works, is a sure preventive, but it should always be applied to cloth or coarse paper wrapped around the tree, and never to the bark direct; but,

as this application can only be partial, or to the main trunk of the tree, it is not as available as the oil of soap, the application of which being directly to the bark, can be, with a suitable brush, extended quite into or among the limbs.

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EDITOR CULTURIST:—Can you inform me where I can get a few dozen eggs of the Bolten Gray, Poland, or Black Spanish breed of fowls.  
J. M.  
COLUMBIA, March 25th.

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We cannot tell you. Will some one of our readers, possessed of the desired information, remit the same to us, with price per dozen for eggs. It may be a favor to all parties.

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EDITOR CULTURIST:—My gardener has no difficulty in raising for me, fine, large asparagus, beautifully blanched or whitened; but it is so tough and stringy as to be almost unfit to be eaten—only an inch or two of the top is tender and fit for use. Is there any remedy?  
INQUIRER.

SAN FRANCISCO, March 26th.

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The difficulty lies simply in the fact that your gardener will persist in blanching, or whitening it, which is only another name for, and the only certain way of toughening it. Let the shoots grow from the stool of the plant—which should be two inches under the surface—entirely out of the ground, instead of through six or eight inches of sand, soil or mulch, and when five or six inches high, cut it one inch only below the surface of the ground, and it will be rich, succulent and tender; but, in color, green, instead of white. The effect of earthing up asparagus, is just the opposite of that upon celery. Strange, perhaps, but true. This plant, where there are beds of it, ought to have plenty of old rich manure drawn upon it in autumn, and spread to the depth of two or three inches, to be raked off in the spring. In setting out beds, it is recommended that the distance between the rows should be at least eighteen or twenty inches, and the plants from fifteen to twenty inches in the row. When the horse cultivator is used to do the work, the rows may be made at least thirty inches apart; where the plants are too close, they must necessarily be small, as they cannot develop themselves. The *Gardeners' Monthly* does not esteem salt of as much benefit to this plant as many do.

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A correspondent asks what we know about the Cassabar melon. This melon is sometimes called the Persian Cantaloupe, as it belongs to the Cantaloupe family. F. A. Fleming, of Curwensville, Pa., states that its flesh is fine grained, tender and juicy, and of a greenish color. It grows to a large size, being from sixteen inches to twenty in length, and is very productive. The writer states it is the best melon he has ever tried.



# Editor's Repository.

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TO THE PATRONS OF THE CULTURIST AND THE PUBLIC GENERALLY.—J. B. Morse, heretofore traveling agent of the CULTURIST, having failed to transact business with the office in an honorable manner, notice is hereby given, that from and after this date, he is in no way connected with the magazine aforesaid, and all persons are cautioned against paying him any money on its account.

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CALIFORNIA STATE AGRICULTURAL SOCIETY.—For the last four years, we have carefully watched the progress of this society, in its advancement from a state of half-starved embryo, to that of its present high and enviable condition, as a well managed and highly creditable state institution, or society. For five years we have attended its fairs annually, and we hesitate not to say, that, in our opinion, each succeeding annual fair, since 1855, has been an improvement—a decided success over the fair of the preceding year, down to the last, or 1859. The Atlantic states, the world abroad has witnessed in the annual progress of this society towards its present high position, something entirely unprecedented, even among much older, more populous, and far richer states and communities.

We see the society in 1856, having at its disposal the very creditable sum of about eight thousand dollars, as a premium fund, and for the necessary expenses of the society. The next year, the fund for the same purposes had doubled—the society having at its command, sixteen thousand dollars. This was something like progress in the right direction, if we can judge properly. In 1858, it had reached the very large sum—for a state as young as California—of twenty-eight thousand dollars. Every year the annual fair was a success over the last, and gaining in popularity as rapidly as in its funds for the society's uses; if not so, from whence comes this annually increasing fund, when but five thousand is received from the state in any one year? But what of the efforts of its officers, and the condition of the society for 1859? The best fair the state has ever seen—a decided improvement upon and over the previous ones, with forty-four thousand dollars at control. Such has been the annual condition of the society, as regards its finances available for the payment of premiums and expenses incident to its management. Does this look like going backward? Does it look like a falling off of interest in its future success? Does it look as though the society or organization had "ceased to meet the wants and wishes of the agriculturists of the state?" Was such an idea ever entertained, until after the annual meeting of the society in January? Had not every paper in the state, that had said anything on the subject, entirely endorsed what everybody had said, down to that time, of its entire success as an institution, even with its burden of mismanagement, along with a great deal of good management? Has not the fame of our last year's fair gone forth an oft-told story, world-wide? It has; no one can dispute it, nor did any one until, by a vote of the society in January, the fair for 1860 was very indiscreetly, perhaps, given again, or for two years in succession, to Sacramento. But because it was so voted, by a

large majority of the members present at the meeting, must it follow that an organization, unequalled in its former successes by any other of its kind in the Union, shall be abandoned? Will it be to the credit of California that, with an annually increasing and truly princely fund, the California State Agricultural Society shall hereafter cease to exist? We think it should be, and believe it will be, still nourished and cherished by every well-wisher of the state's prosperity.

The legislature is asked to repeal the law, donating five thousand dollars annually to the society. We hope it will not be repealed; and, trusting in the good sense of those who control its destiny—the five thousand dollars annual appropriation—believe it will not be repealed. As to the formation of district societies throughout the state, we shall everywhere favor them to the extent of our ability, and would gladly petition the legislature in aid of such societies; but we cannot see the propriety of coupling with such a movement, a desire or an attempt to annihilate our state society, than which, a more successful or creditable one, not one of the older states, with a population no greater than ours, can show. The organization, even as at present managed, with hardly a precedent as a guide, applicable to our condition of soils, climates, and other peculiarities of country, is highly creditable to the agricultural, mechanical, and general industrial interests of the whole state, and should be perpetuated.

**DISTRICT AGRICULTURAL SOCIETIES.**—The movements recently in progress for the formation of a District Agricultural Society, embracing the counties bordering on the bay of San Francisco, has received an additional impulse, amounting to a perfect organization, at an adjourned meeting of the friends of the movement, held at San Jose, on the 21st ult. We see, in this evidently increasing desire to augment the number of agricultural societies, an omen of great good to the industrial interests of the state. We have a state society, whose annual exhibitions or fairs have always been a credit to the state; a considerable number of county societies, all of them, we believe, in a highly prosperous condition; the California horticultural society, distinct from the state agricultural society, whose annual proceedings and reports have always been sought with avidity by pomologists everywhere; and now the necessities of the agriculturists call for yet other societies that shall embrace a union of comparatively local interests, bringing the products of contiguous counties into juxtaposition with less difficulty and cost, than is necessarily attendant upon an annual visitation at the state fair, particularly when held in the more remote parts of the state, or even when fixed to any one locality permanently.

In some of the districts, the annual district fairs will be quite equal to what the state fair would be if held there; and it seems better that it should be, than that the state fair be made to dwindle down to a mere second or third rate institution, by forcing it into localities, distant or inaccessible to the masses of our citizens. From the well known character of the men who have taken the matter of the San Francisco Bay District Society in hand, we predict a decided success. We give in the following the proceedings of the San Jose meeting, which we copy from the *Alta California*:

The adjourned meeting of the San Francisco Bay District Agricultural Society met, pursuant to adjournment, at San Jose, March 21st. President Wm. Daniels in the chair.

The committee appointed on credentials reported the following named persons, as duly accredited delegates to the convention:

*Alameda.*—Dr. H. Haile, A. H. Myers, R. Blacow, A. W. Harris, James Shinn, H. C. Smith, John Lewelling, E. L. Beard, F. F. Fargo, H. Linden.

*Contra Costa.*—Geo. P. Loucks, H. H. Fassett, Nathaniel Jones, C. J. Cutler, W. Bradford, John M. Jones, J. M. Allen, John J. O'Brien, W. J. Callwell, L. M. Brown.

*Santa Clara.*—W. Daniels, Cary Peebles, J. F. Kennedy, H. C. Melone, Colman Younger, J. Lewis, H. D. McCobb, H. L. Winchels, James C. Cobb, C. B. Younger.

*Santa Cruz.*—Judge Blackburn.

*Monterey.*—Alfred Edmunton.

*San Mateo.*—John Cumming.

*San Francisco.*—Samuel Brannan, J. W. Walker, — O'Donnell, W. Green, Michael Hayes, J. J. Haley, R. B. Woodward, J. L. Sanford, J. L. Burtis, John Center.

On motion, the delegates present were authorized to cast the entire ten votes of their respective counties.

The minutes of the former meeting were read and approved.

On motion of Mr. Peebles, John Center, of San Francisco, and G. P. Loucks, of Contra Costa, were elected Vice Presidents, and C. B. Younger, Assistant Secretary.

The following communications from A. H. Myers, President of the Alameda society, and Dr. William Rabe, Vice President of the state society, were received, read, and placed on file :

ALAMEDA, March 20th, 1860.

*President of the San Francisco Bay District Agricultural Convention.*

DEAR SIR :—Owing to the claims of pressing business, which can neither be postponed nor confided to other hands, it is out of my power to be present at our adjourned meeting, in your city, to-morrow. You, sir, and the gentlemen associated with you in the convention, need not be informed that this deprivation is not only a source of regret, but a great self-denial to me. May I not ask, however, that my efforts in the *past*, in behalf of this cause, may partially atone for this apparent neglect, and be accepted as a guarantee of my future interest in its advancement.

When an organization is effected, you will please enroll my name as a member, and I will, in due time, remit the fee to the treasurer. Having implicit confidence in the ability of the committee on constitution and by-laws, I have no report or suggestions to make. You will learn, through the delegates of Alameda county, that our society has fixed upon the fifth of June, as the time for the commencement of our "annual fair and cattle show," to a participation in which you are invited.

You will allow me to suggest the appointment of a committee of one from each county embraced in our district, the duty of which shall be to visit Sacramento city, and obtain from the legislature, such action as may be deemed necessary and advisable. As the convention will be composed of gentlemen whose hearts and minds are devoted to, and deeply imbued with the spirit and teachings of the noble cause in which we are engaged, I repose the utmost confidence in its action, believing it will be judicious, liberal, just and honest. With assurance of an unabated devotion to the development of home interests, and home industry, in which glorious cause it has been my privilege with you to be an humble worker, and with ardent and sincere wishes that signal success may crown our present effort, I am, dear sir, as ever,

Respectfully yours, A. H. MYERS.

*To William Daniels, Esq.*

SAN FRANCISCO, March 19th, 1860.

*To the Agricultural Convention, San Jose.*

GENTLEMEN OF THE CONVENTION :—As one of the Vice Presidents of the State Agricultural Society, and especially from one of the districts which will be represented in your convention, I would most likely have received an invitation, if present, to participate in your deliberations.

My other pressing business relations prevent my co-operation with your body, but my best wishes are with your movement. After all, the agricultural wealth of this state must be paramount to that of the mining wealth, and exertions ought to be made in every quarter, to raise agriculture and its pursuit in its proper scale of the wealth of this state.

It has happened, as some think, unfortunately, that the late agricultural convention resulted in the choice of Sacramento for the next annual fair. I think it was fortunate for the agricultural interests. It has called forth energetic action. Men who previously let matters go by default, have waked up, and are now "up and doing." As one of the officers of the state society—and I believe I express the feelings of the other members of the board—I rejoice in this omen, and I assure you the state society does so with me. But I hope that you will not tarnish your movement by being a party to the destruction of the state society. If a wrong has been done—and I am not prepared to deny it—the present officers had nothing to do with it; and, I am free to say, neither had the old board.

The fault was in the original conception of a popular convention. All this may be amended, as it should be; and, if you will support the present board, it can be. It is easy to pull down, but hard to rebuild; and I have no right to believe that the convention, composed, as it undoubtedly



will be, of men who have nothing else at heart than the welfare of their constituents, and by those means, that if the whole state will devise anything else than harmony, and suggest and carry out such plans as will tend to reconcile and to mend all the wrongs by doing better the next time. Now, will you cease planting because the crops failed one season? You'll try again; and these rules and maxims apply as well to public as private enterprise. I am satisfied we'll come out "all right in the end," if we don't do one wrong to prevent another wrong. Let us all work for one great end—the advancement of civilization, to which agriculture is the great stepping-stone. I need not excuse myself for thus writing to you. I have been many years a planter—introduced the subsoil plow in South Carolina, my former home, and look upon the pursuit of farming as the sole, positive, and sure road to health, wealth and wisdom. Yours, fraternally,

WM. RABE, *Vice President of the State Agricultural Society.*

On motion of Mr. Jones, all persons present interested in the objects of the meeting, were invited to participate in the proceedings, except the right of voting.

The committee appointed at the last meeting to revise and report a constitution, reported the following:

*Mr. President and Members of the Convention:*

The undersigned having been appointed a committee to draft a constitution and by-laws, in order to organize a district agricultural society, for the San Francisco bay district, beg leave to report that they have had the matter under advisement—that they have drawn up a constitution and some by-laws, which they herewith submit to the convention, and recommend that the same be received, and the committee discharged.

Respectfully.

|                 |              |
|-----------------|--------------|
| WM. DANIELS,    | } Committee. |
| WM. BLACKBURN,  |              |
| JOHN CUMMING,   |              |
| GEO. P. LOUCKS, |              |

[The constitution and by-laws are too voluminous for our pages. ED.]

The constitution, with some modifications, was finally adopted by a unanimous vote.

#### LOCATION OF THE FIRST FAIR.

The delegation retired and elected a delegate from each county, whose duty it was to fix the time and place of the next fair, in accordance with article fifth, who finally unanimously agreed upon San Francisco, and the same to commence on the first Thursday of October, and continue five days, exclusive of Sundays.

On motion, the convention proceeded to the election of officers, with the following result:

President, Samuel Brannan: Vice Presidents, Wm. Green and W. Wadsworth: Secretary, F. F. Fargo: Treasurer, Charles R. Bond: Directors, John Center, Michael Hayes, and F. L. A. Pioche.

#### COUNTY VICE PRESIDENTS.

Santa Clara, Wm. Reynolds: Contra Costa, Nathaniel Jones: Alameda, John Lewelling: San Mateo, John Cumming: San Francisco, J. S. Burtis: Santa Cruz, W. N. Slocum: Monterey, Geo. W. Crane.

On motion, a committee, consisting of Wm. Daniels, A. A. Cohen, J. W. Osborn, John Cumming, John Center, and G. P. Loucks, was appointed to visit Sacramento and urge the passage of the bill introduced by Senator Redman, or some similar one, providing for repealing the charter of our state society, so far as the appropriation of \$5,000 dollars is concerned; and also providing for the distribution of the same, or other sums, to the various district societies.

On motion, the board of managers were authorized to publish five thousand copies of the constitution and by-laws, in pamphlet form, for distribution to members.

On motion, the secretary and treasurer were authorized to purchase such books and stationery as may be required in the discharge of their duties.

On motion, the secretary was instructed to notify the officers elect of their election.

On motion, adjourned *sine die*.

FRONTISPIECE.—We are disappointed in our purpose of procuring a beautiful engraving of S. H. Round's "Seed-Sower and Turtle-Drage" for this number. A finely executed drawing of this new implement is in the hands of the engraver, but could not be completed in time. We substitute the following: In this number, we present our readers with an engraving of Wm. Bauham's patent, excelsior, quartz grinder, pulverizer and amalgamator. It seems to have a very long name, but we are confident, from the encomiums that have been lavished upon it by those of our quartz workers who have given it a trial, that it really is well and fully entitled to its name. This machine has, by repeated and careful tests and practical working, proved itself to be *the ultimatum*, for the uses and purposes herein stated. It will do more work with less power; will save more gold with less labor and loss of quicksilver, than any other machine used for working quartz in the country. It is durable, being of iron; is portable and easily adjusted, and one man can attend the working of six; the saving of labor alone being an item worthy the attention of all who are engaged in the mining of quartz.

The machine consists of a circular trough of cast iron, in four or six segments, rendering it portable; sixteen inches wide at top, oval at bottom, ten inches deep, and ten feet in diameter. Within this trough are four cast iron drags, fitting the bottom and sides, that are dragged around by horizontal arms attached to a vertical driving shaft in the center, which shaft is propelled by any available power, and on which any number of sets of arms, with their troughs can be arranged one above another. In the sides of the trough are openings covered with sieves or wire gauze, of any desirable fineness, through which the pulverized quartz, as an almost impalpable powder—and perfectly dry—escapes into suitable receptacles. Crushed rock, or the tailings from the ordinary stamp mills, or partially pulverized sulphates, are worked in this machine entirely dry, as respects pulverization. When used for amalgamating, the screens are removed and the apertures closed with blocks of wood, packed tight with a little clay. From two to three hundred pounds of pulverized matter can be worked at a time, in the most perfect and expeditious manner, washing out every hour if the amalgamation is found to be complete; they can then be recharged. At the bottom of the trough is an escape valve for drawing off the contents, when the amalgamation is completed. We subjoin the following extract from a letter, dated March 9, 1860, to Messrs. Banham & Co., from Nelson Soggs, superintendent of the works of the Nevada Quartz Mining Company, relative to the merits of this machine: "We are still running one of your machines on our Chili mill tailings, as an amalgamator, and can only repeat our former expression in regard to its working, that it 'is worth a mile of arastras,' as it takes far less power and does better work. For what it professes to do, it is the best machine yet offered to quartz miners, as far as our observation and experience go."

IMPORTANT TO STOCK-GROWERS.—We would call the attention of the cattle-breeders of California to the fact that, on the 19th of the present month (April) there is to be an auction sale of pure blooded Devon cattle, in the city of San Francisco. There is probably no state in the Union, where more pains is taken, or where money is more freely lavished upon the purchase of animals of high blood, than in California. Our stock-growers seem determined to breed from the best, at any cost. Now, in regard to the relative value of the different breeds of cattle for California, as adapted to the peculiarities of soils and climates, and the forage produced for the sustenance of the animals we breed, much might be said; for what is true in respect to the proper food and treatment of different breeds in other countries, will apply with equal force here. We would not expect to breed from the slow and heavy Durhams or Short-horn, in the production of a race of cattle adapted to the mountainous districts of the state, either with reference to their quality as working cattle, or adaptability to the forage of such districts; but, in their place, would prefer the comparatively sprightly Devon. We make this remark with no reference whatever to the approaching sale of this breed of cattle; but from a knowledge gained by our own experience in the growth and value of this breed upon the hills of New England. We have raised them there, and can attest to their excellence over any other breed, for general applicability to dairy purposes, for beef and for draught.

The Devon will thrive upon a sparseness of food where the Durham will grow poor; and, as

working cattle, will easily make a distance one-fourth greater in a day than the heavier Durhams. We heartily endorse the Durhams as superior dairy stock, upon a plenty of nutritious, succulent food, obtained with ease and comfort, but not otherwise. Our own experience would indicate that they are a pampered breed, and will meet the expectation of the California breeder, only under circumstances highly favorable to a luxurious accommodation of climate, food and treatment. Not so with the Devons; their hardihood, in all respects, is proverbial. We hope some one may be induced to secure, from the the stock about to be sold, enough of male and *female* of the full blooded, to perpetuate the breed amongst us in its purity; for, however valuable it may prove in its cross upon our native herds, there cannot be a doubt of its value in its purity, as a stock admirably adapted to the conditions of climate and forage that obtain throughout a very large portion of California. We would direct the attention of stock-growers to our advertisement of the sale referred to.

**BEES FOR CALIFORNIA.**—The shipment of bees for California and Oregon has been a brisk business for a few months past. One hundred dollars a stock—the price paid—for good ones, has sent out a host of speculators. Our valley of the Mohawk has furnished a goodly share. From between Urica and Schenectady there have been sent off one thousand hives. M. Quinby & Co., St Johnsville, furnished five hundred and twenty-two. The greatest number shipped at any one time, was the fifth of January. A loss of from fifty to eighty per cent. attended the first attempts, mostly for want of room and ventilation in the hot climate they passed through. A sheet of wire cloth was simply tacked over the bottom of the hive to confine the bees, and resulted in destroying the most of them by heat and suffocation. An approved and more successful mode now, is to make a box or cage of wire cloth large enough to hold nearly all the swarm, and put it over the bottom or top of the hive. When the interior of the hive becomes too warm, most of the bees will leave and come out into this box, where they are much more comfortable, as the air can freely circulate through it. They are placed on the upper deck of the ship, and at the same time kept as much as possible from the light. It would seem that an effort is being made to extend this trade into other quarters. Mr. Q., we understand, has filled an order recently for some to go to South America.—*Exchange.*

**MICHIGAN STATE AGRICULTURAL SOCIETY.**—Amongst the provisions of this society for the future, those that relate to fostering the offering of special premiums by individuals is worthy of attention. The very handsome special premium, offered by Mr. Thomas Williams for a show of the colts of his horse Stone Plover, was the means of adding a very attractive feature to the annual exhibition of 1859. Mr. Williams deposited the premium of fifty dollars with the treasurer of the society, and it was paid to A. D. Power, of Farmington, on the presentation of his name with the report of the decision. We hope that we shall have some more premiums of a like kind. The following resolution relative to holding the next state fair was adopted:

*Resolved:* That this society will hold its next fair at such place in this state as shall make the business committee such offers, on or before the first day of July next for its accommodation, as shall be deemed by them most advantageous for the society, unless a subscription satisfactory in its character to the business committee for at least one thousand dollars shall be furnished to them on or before the fifteenth day of June next, by the citizens of Detroit.

It will be seen by the proceedings, that a class of premiums has been instituted for walking horses. This is something new, and will prove one of the most useful tests of the qualities of horses yet adopted.

[This plan of making the place, town or city at which the fair is held, contribute liberally to the expenses necessarily attendant upon such exhibitions, is a feature that might be imitated with advantage in the annual holding of the fair of the California state, as well as district agricultural societies.—*Ed.*]

**STRAWBERRIES.**—Large dishes of ripe strawberries are presented to view in the windows of several of the dining saloons of our city at this date—March 24th.



**LATE KEEPING APPLES.**—Will some one or more of our readers, or any California fruit-grower, forward to us specimens of California grown apples, of the following varieties: the Swaar, Spitzenberg and Seeknofurther, one specimen—if no more—of each variety. We wish to place them side by side with the same varieties grown in Oregon. Now, can we not, by a fair and square trial, satisfy the Oregonians that California can produce these varieties that will outkeep their own? Who will try it?

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**PERSONAL.**—On my departure from California, I wish, through your journal, to express the thanks I feel for the uniform kindness I have received from the agriculturists of this state. Through their courtesy I have, during two years' observation, gained an intimate knowledge of the peculiarities of vegetable growth in this climate, which I expect to use for the interests of this country. I have not been backward in giving the widest circulation to the facts I have collected, and to the counsels which my observations suggested, for which purpose I have used your pages and the columns of the *Alta*. It is the only return I have had any opportunity to make for the warmth of heart and the open-handed liberality that I have found everywhere I have traveled in your state. I would especially leave a record of my obligations to the hospitalities of Oak Knoll and Fernside.

To one and all I bid a kind adieu, J. S. SILVER.

SAN FRANCISCO, March 19th, 1860.

(ANTHRAX.)

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**HOW TO TEST SILVER ORE.**—The *Trinity Journal* says: As there is no telling how soon rich silver mines may be found in this region, we publish for the benefit of prospectors the process by which the presence of silver may be determined: Pound a small piece of rock, supposed to contain the metal, as fine as possible; then place it on a shovel or anything handy, and hold it over a slow fire, to burn away sulphur or arsenic, which are generally mixed with the ores of silver; then take a cup, or any glass or earthen vessel, into which pour a small quantity of nitric acid (aqua fortis) in which put about a teaspoonful of the powdered ore, which boil in the acid for a minute or two; then take some common salt dissolved in water, in another vessel; pour a small quantity of the salt and water into the acid; if it turns white and looks milky, there is silver in the ore. The above is a cheap, convenient and certain test for silver.

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**WIND POWER.**—We would say to those about to erect wind wheels, for propulsion of machinery for straw-cutting, wood-sawing, threshing, grain-grinding or pumping, that before they decide upon the use of any particular wheel, to examine carefully into the merits of Dickerson's patent, self-regulating wind wheel, as advertised in our pages.

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**ADVERTISEMENTS.**—Our patrons will perceive that we have dropped all advertisements that were not positively ordered continued. We shall adopt this course invariably. The circulation of the *CULTURIST* has now reached a point to be counted only by thousands, and as our advertising pages are wholly an addenda to our forty-eight pages (monthly) of reading matter, the mere cost of paper alone, necessary for our advertising, becomes a matter of no little consequence to our pocket.

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**A BRIGHT FUTURE.**—No country ever had so bright a future opening before it as beams on California to-day. She has mines which enable her to export fifty or sixty millions of gold every year. Independent of the exhaustless treasures contained in these mines, and the personal investments therein; and, besides her mines of silver, mercury, coal and iron, her population of six hundred thousand own property which has an assessed value of more than one hundred and thirty millions of dollars. Within her borders, are seventy-six millions acres of tillable and grazing lands—all of it probably fit for cultivation, and millions of acres of the finest timbered land in the world. Her soils produce more grain to the acre, and larger fruits and vegetables, with less expense—the difference in wages considered—and in a shorter time, than that of any other state in the Union.

To crown these material blessings, her climate is balmy and wholesome, and so mild that roses bloom in open air of winter, and strawberries ripen during the same season. Her skies of seldom clouded, deepest blue, bend over every variety of grand and lovely landscape. The scenery of Wales and Switzerland is equaled by that of the Sierra Nevada; the rolling foot-hills, with their orchard-like groves of oak and spring garments of many-hued blossoms, have a beauty of their own; while the level valley at their bases, stretching for hundreds of verdurous miles north and south, and dashing its waves of grains and grasses against the far purple wall of the coast Range—who shall describe its beauty, or that of the sea coast and bays lying “glassed in their own loveliness” far beyond?—*Hydraulic Press.*

**ALAMEDA COUNTY AGRICULTURAL SOCIETY.**—The next semi-annual fair and cattle show of this society will be held at Oakland, Tuesday the fifth of June next. There are good reasons why this fair will be likely to possess more than ordinary interest. It will be just the time for a most beautiful display of all or most of the earlier fruits of the season. A grand feature of the fair will be the most perfect trial of reaping and mowing machines ever had upon the Pacific coast; and, in other respect which we have not space to devote to a particularization of, it will possess more of interest than would be likely to obtain if deferred to a later season. Alameda always has, can again, and will do herself credit in her industrial displays.

**RUMORED CHANGES—EDITOR CULTURIST:**—Rumor has reached us of an intended change in the editorial management of the CULTURIST. It appears to be one of the current evils of California life, that we can have no landmarks or guide-posts of long standing; that no sooner than a friend's countenance becomes familiar, he is off for New York or Washoe. Has the CULTURIST the silver fever also? Is there not gold enough in the subscription list to make the editorial chair and conscience easy? Is there not enough of satisfaction appreciated in the pleasure given your ten thousand readers? As one of the said ten thousand, I rebel; we have just begun to be used to the CULTURIST's face, and fancy we are appreciating its pages, and think when you are not right, you at least, mean right, which is the great point after all. So much for a bachelor editor; we thought you married and settled, but it appears the only settlement is to be the CULTURIST's accounts and a transfer, and that we, your subscribers, are to be victimized into some new ideas and a fresh confidence. The first is well enough, we want them; the last is only by slow degrees attainable, and we would much prefer the continuance of the present arrangement; and take leave to say to my brother farmers, if your subscription list is short, that the best five dollar investment they can make is in a California agricultural journal, where we can cross-fire at each other on all points of our culture; where we can file up our ideas and rasp off our prejudices, in a few years producing, not only a better tilth in our farms, but in our habits and opinions. Our tillage and our horticulture is yet in its infancy, and constant changes in our agricultural journals is not a good method to advance its interests, either round the bay or

UP COUNTRY.

[When we conclude to abandon as good a thing as the CULTURIST now is—we refer to its condition pecuniarily—we will give our patrons a timely notice. There is to be no stop to the CULTURIST. It is only whether *we* continue to thrust our views and opinions of the science of agriculture, as adapted to California, to the notice of its patrons, or whether we transfer the task to abler hands.—Ed.]

**OFFICE OF CALIFORNIA HORTICULTURAL SOCIETY.**—The next regular annual meeting of this society will be holden at the office of the CALIFORNIA CULTURIST, in the city of San Francisco, on the eleventh day of April. Business of importance will come before the body, in the transaction of which, the presence and counsel of all its members are earnestly solicited.

SAN FRANCISCO, March 30th, 1860.

W. WADSWORTH,  
Secretary.

## METEOROLOGICAL TABLE,

For Sacramento, California; being an abstract of Observations made during the month ending February 30th, 1860; Lat. 38°, 34', 41", N.; Long. 121°, 27', 44", W. Hight of the lower surface of the mercury, 41 feet above the sea at San Francisco. The observations are made three times a day conformably with the hours adopted by the Smithsonian Institution. The indications of the barometer are given corrected for capillary action, and reduced to the temperature of 32° Fahrenheit, but not corrected for its hight above the sea level. The rainy days are included under the head of cloudy and foggy, and are also put separately to show the number of days on which rain fell during the month. The force of the wind is estimated and registered in figures from 0 calm to 10 a hurricane.

By THOS. M. LOGAN, M. D.

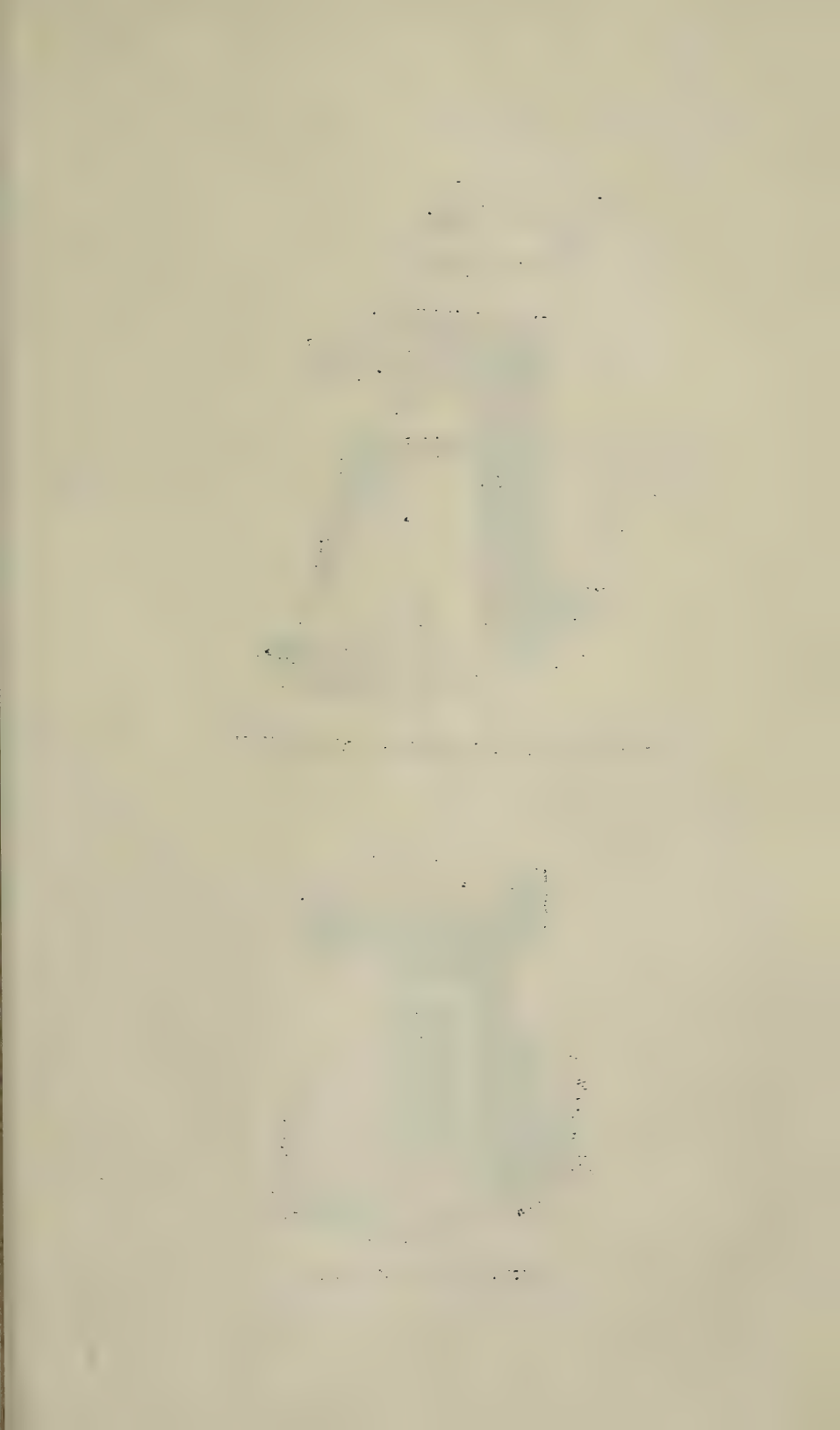
| FEBRUARY, 1860.                     | 7h. A. M. | 2h. P. M. | 9h. P. M. | MONTH.         | AVERAGE OF SEVEN YRS. |
|-------------------------------------|-----------|-----------|-----------|----------------|-----------------------|
| Barometer, Maxima .....             | 30.599    | 30.546    | 30.525    | 30.599 inches. | + 0.203 inch.         |
| “ Minima .....                      | 29.909    | 29.790    | 29.816    | 29.790 “       | + 0.066 “             |
| “ Mean .....                        | 30.174    | 30.120    | 30.130    | 30.141 “       | + 0.063 “             |
| Thermometer, Maxima .....           | 51.00     | 65.00     | 58.00     | 65.00 deg.     | + 1.00 deg.           |
| “ Minima .....                      | 37.00     | 50.00     | 47.00     | 37.00 “        | ..... “               |
| “ Mean .....                        | 43.76     | 54.83     | 50.90     | 49.83 “        | - 1.13 “              |
| Force of Vapor, Maxima .....        | .301      | .376      | .365      | .376 inches.   | - .047 inch.          |
| “ Minima .....                      | .097      | .120      | .133      | .097 “         | - .040 “              |
| “ Mean .....                        | .224      | .278      | .272      | .258 “         | - .025 “              |
| Relative Humidity, Maxima .....     | 92.00     | 87.00     | 86.00     | 92.00 per ct.  | - 2.04 p. ct.         |
| “ Minima .....                      | 39.00     | 28.00     | 41.00     | 28.00 “        | - 13.50 “             |
| “ Mean .....                        | 77.38     | 65.73     | 73.20     | 72.10 “        | - 4.36 “              |
| Number of Clear Days .....          | 8         | 6         | 12        | 8 2-3 days.    | - 1 1-3 days.         |
| Number of Cloudy and Foggy Days.    | 21        | 23        | 17        | 20 1-3 “       | + 1 1-3 “             |
| Number of Rainy Days .....          | .....     | .....     | .....     | 8 “            | - 2 “                 |
| Quantity of Clouds .....            | 4.2       | 3.4       | 2.5       | 3.4            | - 1.4                 |
| Quantity of Rain and Fog .....      | .....     | .....     | .....     | 0.931 .....    | - 1.866 inch.         |
| 1st Days and 2d, Force of N. Wind.. | 12 2.2    | 10 2.5    | 13 2.3    | 11 2-3         | 2.3 + 7 + 0.3         |
| “ “ N. E. Wind.                     | 3 1.7     | 1 1.0     | 0 0.0     | 1 1-3          | 0.9 + 0 - 0.5         |
| “ “ E. Wind.                        | 3 2.0     | 1 2.0     | 4 1.5     | 2 2-3          | 1.8 - 1-3 - 0.1       |
| “ “ S. E. Wind.                     | 5 1.6     | 0 0.0     | 3 1.7     | 2 2-3          | 1.1 - 2 1-3 - 1.6     |
| “ “ S. Wind.                        | 4 1.8     | 4 2.5     | 3 2.0     | 3 2-3          | 2.1 - 2 1-3 - 0.2     |
| “ “ S. W. Wind.                     | 0 0.0     | 3 2.0     | 3 2.3     | 2              | 1.4 - 2-3 - 0.3       |
| “ “ W. Wind.                        | 0 0.0     | 3 2.3     | 1 1.0     | 1 1-3          | 1.1 + 0 - 0.3         |
| “ “ N. W. Wind.                     | 2 2.0     | 7 2.3     | 2 3.5     | 2 2-3          | 2.6 - 1 1-3 + 1.0     |

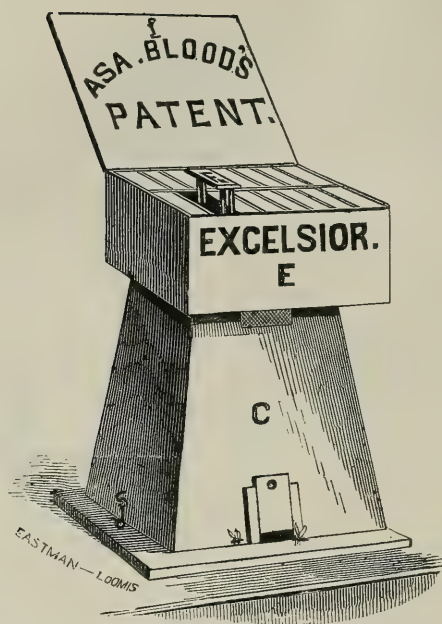
## Thermometrograph.

|                                          | DEG.  |                                                 | DEG.  |
|------------------------------------------|-------|-------------------------------------------------|-------|
| Highest Reading by day on the 4th .....  | 66.00 | Mean of all Highest Readings by day .....       | 55.96 |
| Lowest Reading by night on the 22d ..... | 32.00 | Mean of all lowest readings by night .....      | 39.55 |
| Range of Temperature during month .....  | 34.00 | Mean daily range of Temperature during mo. .... | 16.41 |

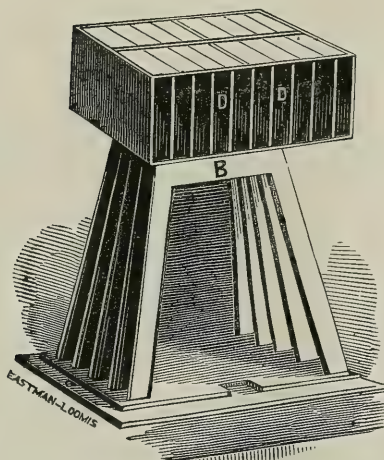
REMARKS.—The indications of an early spring, alluded to in our remarks last month, have proved to have been well founded by the result. Not only in our immediate locality, but, it would seem from late accounts, all over the North American continent, the severe winter which set in so much earlier than usual, is entirely broken up, and the weather of late has been mild and genial everywhere. Our plains are now verdant with the livery of spring, while the peach and other fruit trees are opening their blossoms, and most of the forest trees indicate frondescence. But one cold spell occurred about the 21st—23d, to interrupt the progress of vegetation, which was followed by the most remarkably pleasant weather ever experienced at this season. On the 24th, the barometer, which has ranged generally very high during the whole month, attained at twelve, M., the extraordinary maximum of 30.652 inches—being thirty-three one thousandths of an inch higher than at any other reading ever recorded in our register. As the temperature at the surface of the earth stood as high as fifty degrees during this remarkable stage of the atmospheric pressure, we infer that the superincumbent stratum of air was much colder.







BLOOD'S PATENT BEE-HIVE ELEVATION.



INSIDE VIEW OF SAME.

# THE CALIFORNIA CULTURIST.

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MAY, 1860.

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## USEFULNESS OF FAIRS.

BY WILSON FLINT.

HOWEVER much industrial fairs conduce to the thrift and prosperity of communities where they are held, benefiting alike the landlord, tradesman and whomsoever, caters to the pleasures and necessities of the unusual throngs gathered for the occasion ; however much they may contribute to the gratification and business success of contributors, who have obtained pre-eminence in the departments to which they were competitors, whether in the fine arts, mechanism, horticulture, cereal agriculture, or stock-breeding, in all these, when viewed as matters of personal aggrandizement, what they accomplish sinks to mere individuality, and fails to attain anything more than to illustrate by invidious distinction, that A excels his neighbor B in some one or another industrial manipulation. In all industrial exhibitions, "Excelsior" is the talismanic word which becomes their life and soul ; it ameliorates the artisan's toil, stimulating the weary arm to prodigies of skillful handiwork ; the hope too, of commendation brightens the midnight lamp, where chemistry dissolves crude material matter, exposing to mankind the solids and fluids of earth's organism ; the love of approbation also inspires the patient hand of woman, and flushes the cheek of beauty, as her delicate fingers weave into form the chaste materials that are to adorn her person or embellish home ; for this the farmer watches the bursting blossom to yellow harvest, that he may bring

"First fruits the green ear and the yellow sheaf."

Thus with exhibitors, the hope to excel all competitors is a far greater stimulus than the desire to obtain pecuniary prizes ; because, in most instances, the cost of preparing articles for exhibition, far exceeds any remuneration obtained ; and it is



well that it is so, for were it otherwise, fairs would soon go out of favor, for the simple reason that they ceased to be attractive. Much as industrial exhibitions accomplish to stimulate production among rival mechanics or cotemporary agriculturists they are of far greater significance as the medium of collecting statistics illustrating and making record of the annual progress of a people. In a country like California where the inhabitants have been thrown together from all quarters of the globe strangers to each other, of restless habit and feverish temperament, scattered over widely extended territory, or located in isolated communities, and favored by a climate which enables them to grow almost every herb or plant, conducing to the uses of mankind, it becomes a matter of first importance, that the capabilities of localities so varied in soil and climate, should be more generally brought to public notice; and in no way can this be so effectually accomplished as by each locality having their products largely represented at all the great fairs for exhibition.

The constant and increasing influx of strangers, seeking domicil and homes in our state, are attracted to the fairs; and while comparing the products of various portions of our country, they are enabled, to some extent, to judge of the locality best suited to the kind of husbandry they are intending to pursue. That they so decide may be shown by mentioning a few localities which have, from an early day, been largely represented in all the fairs that have been held in the state; in such districts, the lands being in quick demand, and running up to fabulous prices; while those not brought to the notice of purchasers in this manner, have been neglected, and are difficult to be disposed of. Passing by many places which have been contributors to the fairs—such as San Jose, Oakland and Sacramento—where lands are in brisk demand a glance at Napa county may serve for purposes of illustration of the benefits conferred upon a whole community by an individual enterprise. At an early day, the proprietor of Oak Knoll farm—a large tract of variable land near the center of the valley on the left side—commenced planting fruit trees and vines. Napa valley then was sparsely populated, and lands were held at nominal prices, and horticulture an untried experiment in California; yet the proprietor of Oak Knoll, possessed of foresight, which had been sharpened by contact with men and the mutations of fortune on nearly every theater of action in all climes, took a leading part in the organization of the various fairs which have been held from time to time in the state, contributing liberally in material aid, and always bringing for exhibition a profusion of the produce of his farm. In this manner, Oak Knoll has borne a prominent part in the newspaper reports of the day, its annual exhibits of Pomona's luscious fruit the irrefutable evidence of the fatness of the land, compelling strangers visiting the fairs for the first time to exclaim, that Napa county must be a most desirable country to settle in. Hence, would follow a visit to the locality and subsequent purchase of land.

Not only in California has Napa county become proverbial for its productive capacity, but the awards of committees, embodied in the proceedings of the annual show, have found their way to the Atlantic states and Europe; while the poetic pen of Bayly Taylor, recording the hospitality of the proprietor, has faintly mapped the market.

avenues, flanked on either side with fruit-bearing squadrons in emerald uniforms, and spangled with luscious drops of golden hue and carmine tint, stretching away their extended lines so far that the eye wearies with distance. All these have found audience wherever the English language has record. That the proprietor, by these means of giving notoriety to his section, has greatly enhanced the value of his estate, needs no further argument; and the benefits of his enterprise to Napa county at large, may be estimated by millions. That he will cease to give his countenance to great centralizing fairs in the future, is to doubt his sagacity, or to admit that he is prepared for a decadence.

All large landed proprietors have a deep interest in seeing that the community, where their lands are situated, send a liberal representation of their industry for exhibition. In no more effectual manner can they attract purchasers, and bring their domains into advantageous disposal. But it is the small proprietor, the family living in a sparsely settled district, that has the most vital interest in being represented at the fair, and they should lose no opportunity to display the evidences of the fertility and productiveness of their locality, so as to attract neighborhood settlements. In this manner alone will they be able to provide educational facilities for their children, and obtain the conveniences and pleasures of social life. Of this, an example may be cited. At the last state fair, a gentleman living several miles from Sacramento, on the great plain towards Stockton, made an exhibit of foreign grapes of so superior a character, as to attract general attention: the result is, that his neighborhood long neglected, is now sought for by parties contemplating vineyard enterprises. It should not be forgotten that there are a very large number of persons engaged in mining pursuits throughout the mining districts; in due time many of these, having acquired the means, are on the lookout for a locality to buy a farm. Now, premising that a great fair was to be held at Stockton, Sacramento or Marysville, many of this class of persons would be certain to visit it, on account of proximity, as well as to acquire information with regard to their contemplated purchase of a homestead; and their predilections would naturally be given to those districts making the most favorable exhibit at the fair. Hence, if a locality, county or section of the state, were unrepresented, or only meagerly so, such locality would be overlooked—being out of the mind of the purchaser, and all interested in such community would be sufferers by their own neglect.

Impressed with these views, the writer desires to address a few words to those gentlemen living in the adjacent counties to San Francisco, who felt aggrieved at the action of the majority of the members of the State Agricultural Society in locating the fair at Sacramento, as it is alleged in violation of the constitution of the society. The writer, with many other residents of Sacramento, having the best interests of the society at heart, was in favor of holding the ensuing fair at San Francisco, believing that, until other cities shall have sufficient accommodations for visitors, only two points could be considered—Sacramento and San Francisco, both favorable to centralization. The indifference of the representatives of San Francisco, stimulated an arbitrary majority to decide in favor of Sacramento, it is charitable to believe,

more from motives of present personal self-interest, than a feeling of hostility to any other locality. The mode of locating the fair is an error of the system, by which popular clamor is able to over-ride politic consideration; yet, this is a matter of future remedy, and it is hoped that, from no quarter, will the attempt be persisted in to destroy the State Agricultural Society, because there are defects in its organization. Localities which have heretofore contributed largely to the success of the society may not again be represented, in which case there will be much detraction from the interest of the occasion; but I submit, which will be the greatest sufferer, the agricultural society and the citizens where it is held, or the people of the districts unrepresented? Surely it will not be characteristic of the enterprise of the great nurserymen of Santa Clara county, who have successfully obtained the first premiums at the state fairs, not again to have their names in the annual proceedings. It certainly will be a source of disaster to this leading interest of that county, should they not be fully represented at the approaching state fair, because it being held at a point which has become a great distributing mart for the sale of the desirable articles they are largely propagating, they can expect to effect sales only in proportion as they shall exhibit specimens of fruit, and the proprietor in person comes in contact with those proposing to plant orchards and vineyards.

As an individual member of the board of managers of the State Agricultural Society, the writer feels much gratified at the successful effort of the people of the bay districts, in organizing a district agricultural society, for the purpose of holding a great fair at San Francisco, in October. No better evidence can be adduced to prove that industrial fairs have become permanent institutions of the country, and a necessity of the people; and it is hoped that state aid may be liberally given all district societies, without disturbing that already granted the State Agricultural Society. To repeal the donation, would be to retrograde—a step which it is hoped an enlightened policy of legislative action may hesitate in taking, and for which in none other of our sister states is there to be found a precedent. Having shown some of the indirect benefits conferred upon localities which have been patrons of the fairs, the writer will endeavor, in a future number, to more fully exemplify the direct advantages which accrue to communities and individuals who lend their aid to industrial exhibitions.

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“DEVONSHIRE COWS.”—“An old agricultural editor” says, in reference to an article which appeared in our last volume upon Devonshire cows: “The thoroughly got short-horn has always outranked the lively Devon at all our great shows; and, indeed, his earlier maturity and greater aptitude to take on fat should make him a favorite whenever it is an object to turn corn into beef. But all this does not hinder our liking the hardier Devon, and, believing that the breed has been underrated by our Western stock growers; we should like to see herds of each taken from the pastures *without grain*, unblanketed and unbrushed, and placed before a committee of *farmers* who make butter and use oxen, and *butchers* who supply our city markets! Blood and breed would show then.”—*Exchange*.

OUR AGRICULTURAL PROSPECTS.

CALIFORNIA never presented better promise for a year of unexampled agricultural and horticultural prosperity than now. The winter's rains have been abundant and timely in their coming, and no fears are now entertained of a lack of rain before the perfect growth and maturity of the cereals, that this year, like the receding, occupy so wide a breadth of our arable lands. At the present time of our writing—April 12th—we notice very many fields of wheat and barley already in full head; and, owing to the abundance of the rains, the straw and heads are the largest and longest we have ever seen, and should no extraordinary atmospherical phenomenon occur between this and harvest time, an unprecedented yield will be the certain result. What the effect will be upon the grain market, and the pocket of the farmer, we leave—though not without misgivings—to the future to determine. Our farmers generally do not give attention as they should to a mixed husbandry; it is either all wheat, or all barley, or potatoes, or oats. The consequence is, that whenever the season proves particularly favorable to the growth of the cereals, for instance, which the majority of our farmers seem determined to make their staple product, the markets are glutted, and low prices rule.

From all parts of the state, the most cheering intelligence come to us of the horticultural and pomological promise of the approaching season. Never since the growing of fruit in California, has there been a season so entirely exempt from the lighting effects of spring frosts as the present. Fruit trees of every name and kind have set their fruit abundantly, and as the curculio—that great pest of all the smooth skinned fruits—is unknown in California, we see no reason why we may not expect the most abundant fruit yield ever visited upon us. Nothing but the most untimely frosts can, or will be likely to cut short the fullest realizations of the fruit culturist. Owing to the low prices of nursery trees, during the winter and season of planting them out, large additions to the general orchard stock have been made; not so apparent, however, in the lower valleys, as among the foot-hills and mountains of the Nevada range. A great many small orchards have been planted out, that in a year or two will begin to produce abundantly, and very many communities that have heretofore drawn their supplies of fruits from the valleys and older orchards of the state, will find their supply nearer home, and, we confidently believe, of a quality superior to much now produced that is called very fine fruit.

The extension of the vineyard interest, during the recent planting season, has exceeded greatly that of any previous year. It is not surprising that it should, when we witness the uniform success that has everywhere attended the introduction of the newer varieties of foreign grapes. As soon as it was discovered that European varieties of the grape were as easily and as successfully grown in the dry, warm climate of our state, as in the countries in which they were indigenous, without fear of mildew or blight in any form, that moment placed the matter of wine as among the future staple products of California. Such has been the enthusiasm upon the subject of vineyard-planting for the last six months, nothing like a supply of cuttings,

of certain varieties, could by any means be obtained. The present year, should it prove as propitious for the growth and perfection of the grapes most sought for, as wine-producing grapes, as past years have been, will only add to the present enthusiasm, and thousands of acres of yet newer vineyards will be the result. In every department of pomology there seems to be a brilliant future in prospect, if a full supply and a large surplus can produce such a future. That the high prices for fruits that have ranged during previous years can be maintained even for another season, we very much doubt. Some of the largest peach orchards in the state, that for two years past have borne no fruit, in consequence of late spring frosts, are this year giving promise of unprecedented yields. The same fact obtains in regard to the promise of all the lesser fruits and berries, and we shall expect the same from the grape in its season of setting.

And not only in the grain and fruit department of our agriculture do we see the promise of a future abundance, with its attendant comforts and good cheer, but in the animal world we see countless buds of promise. After a winter, or more properly, a season of unusual severity upon stock—more the fault of our own bad management than any fault of the season—we now find around us a spring and its prospects never before surpassed, either as regards the abundance of forage, or the increase of our herds. Cattle are looking uncommonly fine; and sheep were never doing better. The increase of animals in this country is, we are certain, without a parallel. In one instance, where a farmer has a flock of two hundred and twenty-eight ewes, every individual member has produced a lamb, and among them are twenty-three instances of twins; so that, to the present time, with the entire loss that has occurred, more than a hundred per cent. increase has been realized. California is literally a land of extremes in reference to her forage for animals; for five or six months of the year, nothing can exceed the gorgeousness of her green fields; then follows three or four months in which the fields present but little else than dried herbage and grasses, but furnishing exceedingly rich and nutritious feed; then comes the “winter of our discontent;” two or three months in which the bleaching rains, having nearly ruined the dried grasses, and but little of the new growth as yet started; animals unprovided for beyond the natural pastures, suffer for the time. But, with all the drawbacks incident to a want of a full knowledge of cause and effect, as connected with and governing our soils, climates and circumstances of animal and vegetable growth, no country on earth can possess more of the requisites of a future prosperity and greatness than California. Let the intelligent culturist study well the nature of his own local climates and soils, and then let his practices conform to its requirements, and abundance and cheering success will crown his efforts.

AGRICULTURAL CONUNDRUM.—What is the greatest planting yet recorded? The planting of the Pilgrims' feet on Plymouth Rock, in 1620. It has yielded a nation of thirty millions of people.

YALE COLLEGE AGRICULTURAL LECTURES.

OUR readers generally are doubtless aware that, during the past winter, a plan was devised by PROFESSOR PORTER, of New Haven, Conn., for a series of lectures on agricultural and horticultural sciences, from gentlemen embracing some of the finest talent in America. These lectures have been highly commended, and extracts and reports of the same, more or less condensed, have found their way into most of the agricultural journals of the land. We find the following summary of interesting points embraced in the scope of some few of the localities, in that sterling serial, the *Gardener's Monthly*, which, together with its correspondent's introductory remarks relating thereto, we appropriate, believing the matter will interest the California horticulturist.

"The lectures on agriculture and horticulture, which have been held at New Haven during the month of February, under direction of Professor JOHN A. PORTER, of the Yale Scientific School, have justly attracted a large share of public attention. The enterprise we consider a very important one. Professor PORTER called it a convention. It was, as we understand it, a series of popular and scientific lectures on agriculture and horticulture, delivered by eminent practical and scientific men from all parts of the country, as an adjunct to the scientific and agricultural school already existing at Yale college. The object was to interest the public at large—farmers, amateur pomologists, nurserymen and gardeners—in the subject of agricultural education; and no method could have been devised more likely to accomplish that object in the most thorough and effectual manner. The attendance was quite large, and comprised all classes of cultivators from widely distant parts of the Union, and persons of all ages, from the ruddy-faced farmer's son of sixteen to the grey-haired veteran of seventy. The greatest interest was manifested in all the lectures and discussions frequently occupying six and eight hours of the day and evening, which is a long time for persons unaccustomed to sedentary pursuits to sit on hard benches and listen to lectures and speaking."

DR. FITCHES' lecture on *Economical Entomology*. The Doctor expressed his belief that the difficulties of orchard culture was more traceable to insects than any other cause; and made an earnest appeal to all engaged in the culture of the fruits of the earth in behalf of the study of his favorite science.

PROF. JOHNSON, on the *Proximate Elements of Plants*, was very interesting. Speaking of the vegetable albumen which may be extracted from the common pea, he said that in China, they soak this vegetable in water to separate the albumen, and by adding a little of plaster of Paris precipitate it, after which it is pressed into cakes, dried, and sold under the name of taffo, but is really "pea cheese."

DR. FITCHES' second lecture on *Insects* was very interesting. He said there are sixty different insects which prey upon the apple, twelve on the pear, sixteen on the peach, seventeen on the plum, thirty-five on the cherry, and thirty on the grape. The curculio, or plum weevil, is a native of our country. Notwithstanding the volumes written upon it, we do not to this day know where the curculio lives and what

it is doing for three-quarters of the year. The loss of the apple crop by curculio, he said, was as great as of the plum. After examining the black-knot in every stage, he says emphatically that it is not caused by an insect, nor is it a vegetable fungus; but purely a disease of the tree, like cancer in the human body. The curculio breeds in it, as do also other insects. Dr. F. found larvæ of curculio in the bark, where there were no knots, as well as in them. No available remedy against the curculio was suggested.

PROF. JOHNSON'S second lecture, on the *Atmospheric Food for Plants*, created much attention. He referred at length to the well known fact, that the greatest part of a plant was derived from the carbonic acid in the atmosphere. He startled the agriculturists by the avowal that the stiffness of straw is most decidedly *not* owing to the abundance of silica on the outside, but to "the denseness of cellular tissue in the stalk." This he considered proved in the fact that we got from the leaves of the oat and other plants, a greater proportion of silica than from the stalk, and yet all leaves are pliant and soft. He further said that the atmospheric elements of the soil are not necessary to production, but are necessary to such rapid development as the farmer needs. Solubility of the mineral elements must exist in order that the plant may take them up. According to a new theory recently put forth, this is not so, but the rootlets of the plant take in solid matter, and the plant, by its vital force, transforms it into nourishment. This, however, is impossible. Ammonia is rapidly absorbed by the soil, and the farmer need not fear the loss of this valuable element of manure after the manure is incorporated in the soil. Nitrates, however, are not so easily taken up. But the physics of the soil are, after all, more important than its chemistry. A few years ago, chemical analysis was going to do great things for the farmer. He had only to send a piece of his poor pasture to the chemist's laboratory, to be told precisely how to make the rest of it as good as his garden. But it has been found that certain elements, without which, the plant cannot perfect itself, may exist in the soil in sufficient quantities for the plant, and yet be beyond the reach of the chemist. Chemical analysis pretends not to find a less fraction than the 1-1000; an acre of soil one foot deep will weigh 2,000,000 pounds; an ordinary wheat crop will take off only two hundred pounds of mineral matter; allowing one-half of this to be phosphate, and we have only one-twenty thousandth part composed of that element or quantity—too small, it may be, for the chemists to find. Four hundred pounds of guano, containing one-fifth phosphates, applied to an acre entirely destitute of phosphates, would make all the difference there is between a good crop and no crop at all; but this eighty pounds, distributed through the two millions of soil, would be too trifling a quantity for the present state of chemical analysis to detect. Besides, this is too expensive for the farmer, nor does he need it; for the general deduction of the chemists are of more value to him than any particular analysis of his soil.

The fineness of the particles in any soil is an important point. A Boston chemist found a barren New Hampshire sand, to show the same analysis as a specimen soil from the Sciota valley, one of the richest localities in the world; but the former was

heavy and coarse, while the latter was an impalpable powder, flying away upon the slightest breath. It would take a pretty strong breeze to raise some of our New England soils. A soil, too, must have the right elements ready for the crop in a state of solubility as it goes along. The elements may be there, but if the crop cannot get hold of them they are valueless. Exposure to the atmosphere has a tendency to remedy that. The absorbing power of the soil is great, but this power depends on the minute division of its particles. The effect of the sun is different on different soils. To the vineyards on the Rhine, a black slate is often applied to ripen the fruit earlier. Charcoal does the same thing. This is not because black attracts heat, but because it has the power of converting a heat of great intensity into one of less—a heat of low intensity having a great penetrating power. The heat of the sun is what is called a white heat, like that of a red hot ball of iron, and the slate transforms it into a heat which more resembles the heat from a bowl of hot water.

MR. GOODRICH'S lecture on the *Potato Disease*. He gave all that was known respecting the disease, and gave it as his opinion that it was caused by a lack of vital energy in the plant. The cellular tissue being weakened, passes into a state of fermentation, and mildew follows.

MARSHALL P. WILDER, on *American Pomology*, spoke with his usual brilliancy and intelligence. Of seventy-two pears, enumerated by Quintinye, the gardener of Louis XIV, 1680, only two are now recommended as worthy of cultivation in our country—so much more sensitive had our taste become. In 1828, there was not a single horticultural society in the United States, and scarcely an agricultural one; now we have over one thousand of the latter and fifty of the former. The grape had increased wonderfully in consumption; one dealer in Boston produces annually, from the wild grapes gathered on the banks of Charles River, 20,000 gallons; Connecticut manufactures 200,000 gallons; Ohio, 800,000; and one vigneron at Los Angeles, Cal., turns out 66,000 gallons, or about 2,000 barrels of good wine. Climate influenced the quality of fruits. The failures in fruit-growing were mainly attributed to bad selection of soil and varieties, injudicious treatment, or bad cultivation. All soils are not suitable for fruit orchards, nor are all kinds of fruit adapted to every locality. Mulching the ground about trees with either straw or rotted compost, he thought an excellent plan. An orchard should always be kept free from grass and weeds, and no crop be grown between the trees for fear of starving them. Trees once grown, there should be no plowing deeper than three or four inches, and not even that where the roots would be disturbed. The trees and plants of a country flourish better there than elsewhere. Hence, all our efforts are being, and should be put forth, to get new native sorts of first quality. He was decidedly in favor of putting the pear on quince stalks, and he was glad to know that some who formerly were bitterest in their hostility to the practice, were now of his opinion.

LEWIS F. ALLEN'S lecture on *Fruits*. He did not think the pear well adapted to this climate. In some places it did well—in these it was *very* well. He named particularly along the Detroit river. Very refined varieties of superior quality, he thought more liable to disease than others. With regard to dwarfs, he said the pear

has been grown on the quince in Europe for hundreds of years; Normandy and Belgium were its proper home; and yet, in those countries and elsewhere, pears were dear and a precarious crop. Mr. Allen thought it would pay any one to cultivate dwarf pears in his garden, and perhaps, if soil and climate exactly right could be found, a man might be warranted in venturing upon field culture.

DR. GRANT, in his lecture, advanced some new hypotheses. He doubted whether there were more than one species of American grape. The Herbemont section, he believed traceable to an European origin. In the management of the vine, he laid great stress on the pruning, as of first importance. Shoots are the growth of one year, and are so called from the time that the opening bud in spring has developed its first leaves, until it has completed its year's growth, and is ready for the pruning knife. When cut back to one bud, the stump is called a short spur; when cut to three or four a long spur; and when left with more than this number of buds, it is a cane, except when peculiar circumstances give it a special name. When two shoots spring from a stump near the ground, and are destined to have bearing shoots grown from them, they are termed thighs; and such, when laid horizontally, are sometimes called arms. The objects of pruning are: First, to restrain the roots and branches within convenient limits for cultivation: Second, to concentrate the strength of the vine, and not suffer the production of useless foliage: Third, to get just enough wood to bear full crops of good fruit, and plan its distribution with reference to the health of the vine. There are three kinds of buds—the primaries, which come at the axis of the leaves, or where the footstalk joins the shoot, and which, in bearing vines, are the fruit buds one season, and the next produce the shoots on which the fruit is borne; the secondaries, which come in the side shoots, or laterals, and which are removed in summer pruning, and the adventitious buds, which are unseen until they burst through the bark of the former year's wood. They are called wood shoots, as they produce no fruit except in a few varieties of remarkable productiveness. A bunch is a productive tendril; a tendril, an abortive bunch. The points or ends of bunches should be cut off, as this causes a complete ripening and sweetening of the upper grapes, and prevents the growing of shriveled berries at the point, which is a sheer waste of substance. If a vine is left to itself to grow, the tendency of vitality is upward, the fruit gets beyond our reach, has a coarse quality and woody flavor; while the buds near the ground soon perish, and no after care can revitalize them. It is scarcely possible to fix the duration of a well-set vineyard; it may as well last one thousand as one hundred or a score of years. The vine needs moisture ever—wetness never. Nitrogenous manures are good if well rotted and composted, for they attract moisture, and a well prepared grape border is never dry in even the hottest seasons. If ripened too early, grapes lose flavor, and if the grape-grower is so far north that he is forced to lay down his vines through the winter, he is amply repaid for his trouble in increased flavor and quality of product. The best methods of laying down vary; A mere covering with boards is enough to guard against slight frosts, but with the additional precaution of covering with sand, one is perfectly safe in the worst places. But a slight covering is necessary; just enough to guard against having the sand

wash or blow off and expose the vine, and two or three inches of depth is enough. The whole vine should be covered. If the vine is as large as a man's arm, it will still readily lie down if it has been so treated from the first.

MR. LEWIS F. ALLEN's lecture on the *Apple* afforded some useful statistics. He complained that the census statistics embraced no information on the fruit crop; and yet, after careful computation, he was convinced that its aggregate value could not be less than \$26,000,000. Ten counties alone, in New York state, gave an average of \$200,000 each; Niagara county, only twenty-five miles square, yielded \$250,000 worth of fruit in 1859; Orleans, \$200,000; Wayne gave of green apples \$168,750 for exportation, and \$25,000 more for consumption, and \$35,000 in the dried state. The crop of all New York is about \$6,000,000; of New England, \$4,000,000; of Ohio, \$3,000,000; Pennsylvania and New Jersey, \$3,000,000; the North Western States, \$4,000,000; and the Southern States, \$6,000,000 in all.

MR. PARDEE's lecture on *Small Fruits* was replete with interest. The raspberry, he said, likes a moist, cool location. The northern slope of a hill, or the north side of a fence is best. The soil should be a gravelly loam, and be made very rich with rotted manure. The same treatment is appropriate to the gooseberry and currant, but not to the strawberry. To preserve raspberry stakes, he kyanizes them. A solution made of one pound of blue vitriol to twenty pounds of water, and used for soaking the points or whole length of your stakes, will make them last almost forever. The proper way to gather Lawton or New Rochelle berries for the family, is to jar the canes with a hammer, and catch the berries which fall. The others—and these are those sent to market—are not fit to eat. Never leave more than three canes in the hill, and have no suckers growing near the bush, if you want fruit. Cut back your canes as soon as they have borne their crop, pinch off the ends of the shoots in September, and again in spring; by which plan you will throw the strength of the vine into fruit-bearing on the laterals. The cranberry, on bog lands to which a dressing of sand has been added, should give fifty bushels per acre the first year after planting, one hundred and fifty bushels the next, and so on up to four hundred and fifty bushels as a maximum. He said that if compelled to choose one alone of the small fruits, the currant would be his favorite, as much of a strawberry man as he was.

For DR. GRANT's second lecture, MR. A. FULLER was substituted through the Doctor's illness. Mr. F. spoke of grapes, with regard to their pruning culture. Even with a choice grape, its quality and profit depended, in a great degree, upon the cultivation and pruning given to it. In summer, during the season of active growth, the liquid portions of the sap are exhaled almost as fast as they can be absorbed by the roots, and no great accumulation can take place in any one portion of the vine. But the leaves, once fallen, the roots continue to absorb their appropriate food from the soil, and thus the wood becomes quite filled with sap, which is kept in store for early spring use. It is, therefore, plain that we should prune our vine as soon as the leaves drop off, that the sap, which is afterwards absorbed, may all go toward the nutriment of the buds which remain.

MR. BARRY's first lecture on *Orchard Management*. Whether spring or fall

planting is best, Mr. B. said, depended whether the kind of tree ripened early in the fall or not. Late growing trees were not successful when fall planted. He plants shallow, in deeply subsoiled ground, and cultivates between the trees; never, however, coming within six feet of the tree, at least, with the cultivator. Never allows the roots to be disturbed in any way; surface manures in the fall, and forks it in in the spring. Mulching in the summer is good. Standard apple trees, thirty to forty feet apart; pears, plums and cherries, twenty to thirty; peaches twenty. In exposed situations, plant hardy kinds in thick rows; in more exposed situations, dwarf apples, pears, plums and cherries, ten to twelve; dwarf apples, on "Paradise stocks," near as six feet even, and pyramid pears on quince, eight feet. Of pruning, he said the only instrument used in a good nursery is the pruning-knife; and this should be kept so sharp that an ordinary branch may be snapped off at a single draw, leaving a perfectly smooth surface. Shears should never be used. A saw is only required when trees have been neglected. Branches removed should be cut close to the trunk, so that the tree may not be injured by decay of a stump. Shorten shoots to a good strong bud that will make a leader, not too close to nor too far from the bud, and with a slope of cut of about forty-five degrees. In shortening your leader, do not always cut on the same side, for you would thus make the whole tree lean one way or the other. Pruning, rightly done, is a blessing; wrongly, a curse. Fools cut away branches indiscriminately, until their trees are but skeletons, with a few bearing branches at the extremities only. The force of the tree is then expended in producing a crop of rank, watery shoots in the interior, to be again cut away to make room for a second crop. Trees should never be suffered to bear fruit until they have got strength and vigor.

MR. BARRY, on *Nursery Management*. Twenty years ago, two or three small nurseries in the neighborhood of each of our large cities, occupying in all not more than five hundred acres, and a few other small nurseries of an acre perhaps each, supplied the wants of the United States and the Canadas. Now we have over one thousand nurseries; and in Monroe county, N. Y. alone, where he resides, there are three or four thousand acres, producing annually five hundred thousand dollars worth of trees. In the whole Union there are annually sold fifteen to twenty millions trees, for, say five hundred thousand dollars. The surface of a nursery should be nearly level, and sheltered from the cold winds. Spruce or larch is good for shelter. Stony, very stiff and very sandy soil objectionable. Should be well drained. The drains should be never more than two rods apart, and were better to be laid at a depth of three and a half feet. In a stiff, retentive clay bottom, they should be only twenty feet apart. He deprecated planting a nursery too closely as detrimental to the health of trees. Fruit stocks should be thinly sown, and so managed as to be fit for working when one year old. To obtain strong quince stocks, plant out a certain number of stool or mother plants, in a deep, rich, well-prepared soil; when they have stood one season, cut them all off close to the ground. The next season they will produce strong, smooth shoots, which, the following year, may be earthed up half their length, as celery is earthed up, and in the fall they will have rooted well enough to bear sep-

aration from the parent plant. If left on during winter the frost will ruin them. Such stalks as these may be set in nursery row the following spring, and budded the same season. Only two crops of shoots can be taken from the same stool, and a good dressing of manure is necessary to get even the second. Pears propagated on small, weak quince stalks are worthless. In budding or grafting quince stalks, it should always be done near the ground, so that the whole of the quince may be set under ground without being too deep. Root grafting, although still an open question among nurserymen, Mr. Barry believes to be, if properly performed, as good a mode for propagating the apple, and more especially all the strong growing sorts, as any other in use. It has been sadly abused, and thus been brought into disfavor with bunglers and their victims.

Management of Young Trees.—Trees are too closely planted as a general thing; three and a half feet between the rows, and three or four inches between the plants, is too little space to give either air, light, hardiness of constitution, spread of root, or strength of top. For apples, pears, or other trees which are to remain two years in the nursery row, the distance from tree to tree should never be less than eighteen inches for standards, and twenty-four inches for pyramids; and even at such distance the pruning-knife is to be freely used. Country people are too apt to value a nursery tree in proportion to its height, rather than its strength and proportions—a too common and fatal mistake. Cutting back should be freely practiced, and the leader, or main stem, should be pruned as well as the side branches, else one will get a tall and ill-proportioned tree. An enormous amount of money is annually lost to tree purchasers from rude and unskillful taking up. Trees are torn up by the roots, as if the trunk and branches were the one thing necessary, and the roots superfluous. The proper way is to open a trench on each side of the tree with a common spade, *keeping the edge towards the tree*, so as not to cross a root. These trenches should be far enough from the tree to avoid the main roots, and deep enough to go below all, except the tap-root, which may be cut off. This being done, the tree may be pulled up with its roots entire.

THE RIGHT WAY TO PLANT TREES.

WITH the present number, we propose to drop the discussion of the tap-root and planting of trees generally, until the approach of another planting season, when, if our correspondents choose, they can renew it. It is a matter of importance in a climate like ours, where our soils are subject to a six months' drying process from desicating winds and unobstructed solar heat, to ascertain whether trees are really doing right, when they send down their roots into the moist subsoil. We early assumed the position that, as our climates were entirely different from those to which we had been accustomed, a different system of management and tillage might be found expedient in the growing of trees.

One of the first requisites to success, in the Atlantic states, in the choice of ground

for an orchard is well drained subsoil; and to make their lands and keep them dry enough for orchard thrift, is a desideratum. Here, every possible plan, from irrigation to mulching and keeping the surface in fine tilth and free from weeds, is devised to maintain sufficient moisture to sustain the tree. Are there not directly opposite conditions here? Moisture, the *bane* of orchard culture at the East, is the *antidote* here. Deeply running roots may be entirely a superfluity in grounds with a subsoil so wet as to require artificial drainage; whilst in one naturally dry and porous, roots might penetrate to advantage, particularly if the theory of many be true, that all soils, to a considerable extent, suffer the leaching process, by which many of the soluble salts—valuable fertilizers—are carried down into the subsoil.

It is now nearly two years since we ventured to say, upon the subject of orchard planting, that, but for the *inconvenience* of planting out an orchard in the way we propose, we should prefer that the trees be grown from seeds, in the places in which they are to remain. We would, of course, bud or graft the trees, at or near the ground, in order to secure the varieties desired; but to obtain the best and most durable trees in a California soil and climate, we believe they should be grown with roots as perfect in all respects, as nature could grow them. To our proposition a few took exceptions, on the ground that trees grown in that manner would have tap-roots; that is, perpendicular roots penetrating the subsoil; and that such roots were detrimental to the growth and durability of the tree. We did not believe it then, and don't now; because we have not heard what we consider to be one good reason for supposing that such roots are injurious to trees.

Immediately after we had advanced the proposition, favoring the practice as peculiarly applicable to California climate and soils generally, as a singular coincidence, several of the horticultural journals of the Atlantic states, or their contributors, became involved in a like discussion of the same subject, and which has been unremittingly continued till now; and as showing that we are not alone on the side of allowing trees to send down their roots into such soils within their reach as they may elect, we follow our own present remarks, by an article upon the planting of trees, by a practical culturist, of South Carolina, believing that the climate of that section of the states will more nearly comport with our own, and practices there, be found in many respects, applicable here. We commend the *entire article* to the careful consideration of our readers.

SHALLOW PLANTING OF TREES.

BY J. W. JONES, CHARLESTON, S. C.

IT is hardly possible, now-a-days, to take up a book on gardening without finding the author continually referring to nature and her mode of doing things as the *sine qua non* of perfection. She is held up as a mirror in which the gardener or amateur may see the true mode of performing his multifarious operations. She is held up as a perpetual example and guide, from whose dictum there is no appeal.

Her laws are like those of the Medes and Persians, unchangeable. The poor dame is dragged in by the ears to stand Godmother to all the bantlings that the busy brains of our numerous horticultural writers bring forth. Let it only be proved, or rather supposed, that such a process is founded upon a natural law, or upon what we conceive to be a natural law, and the writer imagines his argument to be irrefutable. But, before we "quote nature," we ought to be quite sure that we understand her; that we have read her book aright. I fear we know very little of her operations; we conjecture, or guess at a great deal, but the science of vegetable physiology is yet in its merest infancy, and the subject of vegetable nutrition, notwithstanding all the light that has been thrown upon it, is still in comparative darkness.

Lindley, in his great work, "The Theory of Horticulture," diffused much useful and valuable information through the gardening world; valuable, not so much from the theories he advanced being incontrovertible, but because he taught the gardener to think; he taught him the reason why any particular operation, done in a particular manner, would succeed better than when done in a contrary manner. He showed that gardening was not a mere mechanical pursuit, to be carried on by the aid of certain old laws and axioms as guides; but an art, and a fine art, whose chief operations were based upon, guided and assisted by a knowledge of certain laws of vegetable economy.

It has been the fashion then, these twenty years, little as we really know of the matter, to take what we call nature for our guide in gardening operations. We have drawn certain conclusions from our observations of her manner of doing things; but are we quite sure that our premises are right? We do not imagine that we have penetrated all nature's secrets; we see the results rather than the causes, and are apt, I fear, to confound the two. Nature and experience are sometimes in apparent conflict—our theory and our practice do not agree; we sometimes do things in gardening, and with success, too, that are quite contrary to the teachings of nature or theory. Chemists tell us that the substance of a plant can be reduced to certain well-known elements; and that the tree must derive such elements from the earth or air; and, therefore, it must be advantageous to place such substances as are naturally found in the body of a tree, within reach of its roots or leaves, as a supply of food. Yet what do we really know of those nice chemical changes and combinations continually going on in the body of a tree? We cannot explain how one plant extracts such starch or sugar, another resin, another opium, another indigo—all from out the same plot of ground. We can analyze the products, and separate such component part, and "find out what it is made of;" we may, in some cases, recombine, but we cannot, as nature does, draw from the soil or air for ourselves, that which a tree seems to do so easily and so surely. Will it ever come to pass, I wonder, that chemists shall be able, easily and cheaply, to extract *our* food directly from soil or air as plants do? If they can, as they profess, feed plants, why in the world cannot they feed us of the animal creation? Are we forever to be dependent upon the vegetable creation to prepare our food for us? I think the preparation, or rather formation of food directly from mother earth, may *sometime* be arrived at; but the

chemists have to find out a few more "elements" first. I have been led to these irrelevant remarks from reading an article in your last January number, on the shallow planting of trees, by William Bright, of Philadelphia. Superficially viewed, the reasons given for the practice of shallow planting are plausible enough. I have nothing to say against the greater part of his article: it is only his reasoning and conclusions I cannot agree with.

If I have not mistaken, Loudon was the first to advocate shallow planting, or rather planting on mounds—which is quite a different thing. If that colossal book-maker had had all the trees to pay for that died under the treatment he recommended, he would have had need of a dozen fortunes. Like your correspondent Mr. Bright, Loudon based his practice upon nature. Because, forsooth, Loudon had observed that all trees, of any size, appeared to stand on a mound, or slight elevation; *ergo*, all young trees ought to be stuck on a hillock already formed for them. It is a wonder that such an acute observer never discovered that the gradual thickening of the roots, and consequent upheaval of the soil, caused the mound-like appearance.

I well remember that a sort of *furor* existed in England for planting everything high and dry after Loudon's remarks appeared. To say nothing of young forest trees, even poor little plants in pots were elevated on miniature hillocks—much to their discomfort, no doubt. At the time of which I speak, a plantation of young forest trees resembled nothing so much as a collection of ant or mole hills with a stick thrust into the middle of each.

Mr. Bright's trees do well enough, I have no doubt; and so they ought, after such a world of trouble. To save the lives of his trees he necessarily mulches the mounds heavily for the first two years; *id est*, until the roots have descended to the general level of the soil, and have become independent of the mounds. I must confess I cannot see why they should not have been planted on the ground level in the first instance, as being, after all, the more natural position of the tree.

Mr. Bright is not satisfied with nature in one respect; for he does not like her mode of arranging the roots of trees; that is, so far as to their taking a downward direction. Mr. B. seemed to expect that if he once places the roots in a horizontal position, they must continue to extend in that direction; though every-day experience must have proved to him the contrary. All trees, except perhaps when growing in very wet soil, naturally form perpendicular, as well as horizontal roots; and, if the former be cut off will try and remedy the evil. It is not to be supposed that trees form tap-roots to their own prejudice. It is to be supposed that these roots descend down deeply into the earth for some special purpose. As a rule, it may, I think, be safely stated that tap-roots are essential to vigorous growth and durability of a tree. Moisture has a great deal to do with the direction of roots. If we could measure the quantity of water evaporated from the leaves of a large tree in the course of a single day, we should be better able to appreciate the value of the tap-roots.

In an uncongenial soil, to plant trees on mounds with the expectation of thereby permanently correcting the evil is evidently fallacious, for the roots must eventually

extend into, and be entirely dependent on the surrounding soil; and if that soil be bad, suffer just as much as if not planted on a mound; the mound may differ, but cannot cure the evil. If the soil be good, I do not see the utility of elevating the plant above the ordinary ground level.

Mr. Bright's chief, and so far as I see, his only reason for shallow planting, is because it is "nature's own method" of growing trees, and experience has proved it to him *the best ever devised by man*. Now, nature does not, when the plants require a mound, use a heavy mulching of leaf mould or litter to keep her nurslings alive for two years. She plants on the surface, even or uneven, and one of her first operations is to send *down* a root, and as long as that root finds itself in a suitable medium it continues to extend downward. I have probed with a stick the hollow root of a Carolina pine tree to the depth of twelve feet or more, and the root was then more than a foot in diameter. I have seen beautiful examples of nature's own planting on some of our bluffs, where the soil has been washed away, and left the tap-roots of trees exposed to the depth of fifteen feet, and thick roots at that depth, so that the tree seemed to have nearly as much wood below as above ground.

Now, I might argue that what is true of a pine tree in the light, sandy soils of Carolina must be true of a pine tree in the heavy clays of Pennsylvania; yet, such an argument would be evidently absurd. Taking nature for my guide, I must assert that, as our trees sent down their roots to an immense depth—to the water line, in fact, be it two or ten feet—I might assert that it would be to the manifest advantage of the tree to sink a well where the tree was to be planted, and fill it up with good soil to encourage the development of the tap-roots, which would be another absurdity.

Gardeners generally appear to have a particular spite against tap-roots, as if, the gardeners know better than the trees themselves what is good for them. Not content with nature's operations, they seek to improve upon them; yet, by a singular crookedness in reasoning, stultify a self-evident law, by depriving a tree of its main stay—a tap-root.

No one will dispute Mr. Bright's conclusion, that a tree set comfortably on a mound of good earth, and warmly mulched with leaf mould, is in a better condition to live and thrive than a tree plunged deeply down into a cold, "dank cistern of a hole;" but the latter is not the proper mode of planting a tree. If Mr. B. wrote his article merely to prove that trees planted as he directs, would succeed better than when planted in this horrible "dank hole," I have no doubt of his superior success. The question is, I think, whether his trees will succeed better planted as he directs, than if properly planted on a level surface—the same pains, the same amount of labor being expended in each case. If he proves less than that, he proves nothing.

As a matter of taste, I should decidedly object to having a fine lawn disfigured by those formal rounded mounds at the base of each tree, giving a puerile and artificial effect, suggestive of ancient circular flower beds, that had been indiscreetly planted with a large growing tree in the center of each, which tree had finally overpowered the more humble flowers and become sole possessor of the land.

These remarks of mine are not intended to afford aid and comfort to that large

class of bunglers who thrust a tree into a hole anyhow, though, I may believe, that people give themselves a great deal of unnecessary trouble in planting a tree; yet, I have no sympathy with those who, as Downing says, plant a tree as they would a post.—*Gardener's Monthly*.

RINGING THE VINE.

WE have heretofore alluded to the practice of encircling the branches of the vine and fruit trees, with a view of increasing the size and hastening the maturity of fruit. The practice consists of the removal of a narrow ring or circle of the bark from such vine or branch as it is proposed to effect by the operation. A clean cut is made surrounding the limb below the fruit, quite through the bark, and another at a proper distance from the first—say from one eighth to a quarter of an inch apart—the intervening ring of bark is then entirely removed; even the fine liber or inner bark, adhering closely to the sap wood, should be carefully scraped off in case the bark does not peel freely from it; the object being to arrest the flow of sap which has the effect to hasten the maturity and enlarge the size of the fruit upon the limb or vine so operated upon.

It is a very pleasing and satisfactory experiment to the amateur culturist of fruits; and to those desirous of testing its effects, we would say as to the time when the operation should be performed, that we have tried all seasons, from the time of spring blooming to the end of the fruiting season, and upon almost every description of fruit tree, and we have found that, as a general rule, if you know about the size which your fruit usually attains, let the ringing be done when it shall have grown to one-half its full size. Some practice an earlier decortication, believing that soon after the fruit has fairly set, is the best time. The effect upon the size and early maturity of the fruit is apparent, done at whatever season; but the most striking results have always been shown under our management, when it was deferred till the fruit had attained from one-third to one-half its ordinary size.

As pleasing as the practice is—and its results almost always are—it is not without its objectionable features. Among those we find the following, in a translation by one of the editors of the *American Farmer*, from the FLORE DES SERRES, which we append for the information of those who may feel inclined to experiment. Grape vines in pots are frequently subjected to the process of ringing with highly satisfactory results.

“At one of the last sittings of the Imperial Agricultural Society, a member of that society, M. Bourgeois, presented vine branches incised circularly the preceding year, with a view to experiment upon a method now for a long time extolled as a means of accelerating the ripening of fruits. According to this agriculturist, the operation resulted in advancing maturity some days, and in making fruits attain a more considerable size, a double advantage which is to be appreciated especially in cold localities, or such as have bad exposure, so frequently met with in the neighborhood of Paris,

and in the north of France generally. He adds, that in so far as it concerned the vine, it had in addition the effect of preventing the blighting and falling of the berries.

"In his experiment, M. Bourgeois proposed to himself to decide the following questions, left undetermined by his predecessors: first, to fix the epoch in which the annular incision has most chances of success; second, to determine the width and depth of the incision; third, to discover whether it is best to make it on this year's branches, or on the old wood; fourth, finally, to be assured of the precise point where it ought to be made, relatively to the bunches, in order to produce all the effects expected.

"The discussion was opened upon these different points of the question, and many members took part in it. These are the most important conclusions to which they arrived: M. Pepin acknowledged that the annular incision of the branches of the vines deserved to enlist the attention of the cultivators of the vine; he believed that it might be of real service when the vines are placed in conditions altogether unfavorable, and that its habitual consequences are a more precocious or more perfect ripening of the fruit.

"M. Hardy had for ten years practiced annular decortication as well upon the vine as upon other fruit trees; he, too, believed that it advances the ripening, in a proportion that varies according to situation, from four to seventeen days, but he remarked at the same time, that it diminished the quality of the fruit. He cites, as pertinent to this, a proprietor of vineyards, near Soissons, who, having practiced the operation upon a great scale, was obliged to abandon it, in consequence of the deterioration of his wines, the prices of which remained lower than those of the wines of his neighbors who had not practiced the operation.

"A third member, M. Chivereux, having examined and tasted the grapes presented by M. Bourgeois, declared that he found a sensible difference between those which were situated below, and those which were above the incision. These last appeared manifestly inferior to the others, as well in the flavor as in the size and firmness of the berries.

"Notwithstanding that the practice of the annular incision upon the vine goes back to the year 1776, M. Hardy observed that it has nowhere become general; it has always, on the contrary, remained in the condition of a simple experiment. Sober cultivators of the vine have never used it otherwise than by way of curiosity. Such, in particular, is the case with those of Thomery, skillful and so attentive to minutia in the matter of vine culture, and who have never adopted the annular incision as a means of improving their crops.

"As a last remark, M. Pepin declares that the annular incision has the effect of constantly weakening the subjects upon which it is practiced, which is, it must be avowed, more than a compensation for the advantages that it can offer. M. Hardy confirms what was said by M. Pepin, by facts taken from his own observation. Trees always suffer, and their life is more or less abridged after having been submitted to annular decortication, at least during many succeeding years.

"These results will not surprise persons accustomed to reflect. It is a fact, very general, if not without exception, that the fruits which, without detaching themselves from the tree, undergo any change whatever, whether in consequence of a disease of the subject which bears them, whether from the fact of a puncture by an insect, whether from any other cause, take much before those that have remained healthy, the appearances of maturity.

"There is no one who has not remarked this upon cherry trees, apricot trees, plum trees, etc., the fruits of which attacked by some one of the accidents that we have just enumerated, become colored with the tints of ripeness before they have perfected their normal shape; but it is known, too, that their flavor is greatly changed. The annular incision having the effect of impeding, or even of arresting the advance of the sap, which, if it were abandoned to its natural course, would be attracted by the fruit, produces upon the latter an effect analogous to that which an accident would originate, such as the partial breaking of the branch or that of the tree itself. The fruit not receiving more or receiving less sap has the sooner completed the elaboration of it, but even from that also, it is poorer in juices, relatively to the mass of its solid tissue. And, as to the weakening of the tree, it results from the disorder brought into its constitution by the continued derangement of the equilibrium which ought to exist between the work of its roots which absorb, and that of the organs in the air which elaborate. In fine, annular incision is an operation contrary to nature; consequently bad and admissible only in the case where the conditions of culture are so unfavorable that the only choice is between gathering imperfect fruits or gathering none at all."

HABITS OF ANIMALS.

CUVIER places monkeys next to man in the scale of being. But their grotesque resemblance of the human figure furnishes the only reason for this classification, since in physical structure and intellect they hold a much lower place. They are called *quadrumanæ*, or four-handed, but these four hands are only feet, formed for clasping branches of trees, and are by no means equivalent to the two hands of man. Near a cultivated region they become a great nuisance by their predatory habits. Keeping concealed during the day in the depths of the forest, they sally out at night-fall, setting watches to guard against surprise, and begin their attack upon cornfields and orchards, sometimes forming a line from the orchard to the forest, and pitching the fruit from hand to hand into the covert.

Monkeys are found in the islands of the Indian ocean, the southern coast of Asia, many parts of Africa, South America, and the rock of Gibraltar, in Europe. They live in the recesses of the forest, or in the inaccessible parts of the rocks, as at Gibraltar, and the Cape of Good Hope. Various species are found in different countries, varying from five feet and a half high to the size of a small squirrel. The food of most species is entirely vegetable, but tame individuals frequently eat meat, or any-

thing which is food for man. When kept as pets, they will become very fond of wine, and it is said that monkeys in menageries are bribed by this to perform their amusing tricks.

The African Gorilla, the wild man of the natives, is said to be the largest and most powerful of the monkey tribe. He stands five feet and a half high, with shoulders three feet broad, and is a most terrible beast to encounter in the forest. A gun barrel is twisted and broken by his teeth, and nothing can escape its fury if excited. No specimen has ever been preserved alive, but a skeleton now exists in the Royal museum at London. The Chimpanzee is another of the same species to which the ourang outang and gorilla belong. Several of these have been tamed and exhibited at Regents garden, in London, and at the Jardin des Plantes, in Paris. Many amusing stories are told of their sagacity and intelligence, which is exhibited in such human-like actions as render them among the most attractive pets. None of these enormous species live in South America, whose forests teem with similar varieties. These differ from the Old World species, in the thumb not being placed in opposition with the fingers, the want of cheek pouches and naked callosities upon their bodies; and generally in having a prehensile tail, which is in constant use, and is only relieved from one object to be wound around another. One species, consisting of seven varieties, wake the echoes in the forests by night with their unearthly howling. One variety of this species, called the Preacher, has singular habits, thus described by Marcgrave, an old traveler.

“Morning and evening they assemble in the woods; one mounts himself upon a higher branch, while the rest seat themselves beneath; when he perceives them all seated he begins as if it were to harangue, and sets up so loud and sharp a howl as may be heard a vast way—some say a league. A person at a distance would think that a hundred joined in the cry; the rest, however, keep a profound silence till he stops and gives a signal with his hand; then, in an instant, the whole assembly join in chorus, till he commands silence by another signal, which they obey in a moment; then the orator finishes his discourse, and the assembly breaks up.”

In receiving stories like this from the earliest travelers, who very likely received them from the natives, we must use some caution.

The ouistiti, a species of marmozet, found native in Brazil, is smaller than our common squirrel, and is a favorite pet with the Brazilian girls, who give large prices for them, as they are rare, even in their native wilds. The ouistiti is covered with soft fur, and has a long bushy tail, slightly prehensile, and resembles in its appearance and habits a squirrel, rather than a monkey. It has but a rudiment of a thumb, and uses its feet much in the same manner with the squirrel. Several specimens of this beautiful little animal have been carried to England, where they have lived for some time in comfort. They live on animal flesh, insects and eggs, which they search for with eagerness, but do not receive vegetable food when offered.

Besides the family of *simiadae*, comprising monkeys and apes, there are the *lemurs*, which inhabit Madagascar and some islands in the Indian ocean. These also have four hands, with the thumb opposed to the fingers. They have a muzzle like a fox,

and a very long bushy tail. They subsist upon birds, insects, reptiles, eggs, etc. One species of this family have an extension of the skin like our flying squirrel, which enables them to make long flying leaps from tree to tree. Their habits are nocturnal, and their name *lemur*, Latin, signifying *a ghost*, arose from the ideas suggested by their silent sweeping motion from tree to tree.—*American Stock Journal*.

CULTURE OF COTTON.

AN inquiry comes to us from an esteemed friend and patron of the CULTURIST, relative to cotton-growing, the kind of soil best adapted to its growth, method of culture, and its comparative effects upon the fertility of soils devoted to its growth. As we have had no experience of our own in its culture, we avail ourselves of an article on this subject, from the pages of the *American Farmer*, originally written by Ex-Governor Hammond, of S. C. We hope our correspondent will not fail to give us the result of the season's experience in the production of this important, staple product of Southern states, in due season.

"THE GROUND CANNOT BE TOO WELL PREPARED FOR COTTON.—If it had rested one year, it should be broken flush, as early in the previous fall as possible, and spaded just before planting. If it has rested two years, or been planted the preceding year, let it be listed as early as it can be done, and two furrows thrown upon one list. Immediately upon planting, let two more furrows be thrown up and balk broken out completely. The common manner of running three furrows and planting on it, throws the winter's portion of the crop-work upon the laborer, during crop time, and is inexcusable, unless heavy clearings are absolutely required. The reason for not listing after one year's rest is, that the vegetable matter will be too abundant and too coarse to form a substratum to receive the tap-root.

COTTON SHOULD BE PLANTED EARLY.—It may increase the difficulty of getting a stand, and give the plant for a long time a puny appearance, but every stalk of cotton planted in March, or first week in April, that survives, may be readily distinguished in any field that has been replanted later. It bears more and earlier, and stands all the vicissitudes of June, July and August better. There are several methods of planting. Your committee recommend planting in spots, regularly measured in dibble. It is somewhat tedious, though less so than is generally supposed, and certainly does not take as much time to drill and chop out; nor is time so valuable at that period, as when the latter operation is required; while a better and more regular stand may be secured. There is no land, or but little in our district, in which cotton rows should be over three feet apart, or the cotton further than fourteen inches in the drill, one plant in a place. To make a large crop, there should be an abundant supply of stalks. When the weather is too wet to plant, time may be often saved by dropping the seed, but not covering until the ground is dryer. If, however, it cannot be covered in three or four days, it is time lost, for it must be replanted. Always cover lightly, under any circumstances; and always plant in something of a

bed in any land. It keeps cotton dryer, and affords more air when it is young. It enables you to get at it in working. By increasing the surface, it absorbs more moisture if it is too dry, and gives out more if it is too wet; and in both cases gives you the advantage of a vertical sun on the tap-root, which hastens the maturity of the bolls—a vast desideratum in our climate. On this account, the bed can hardly be drawn too high at the last hoeing, in any season.

In cultivating cotton, whether with the plow or hoe, the chief object is to keep down the grass, which is its greatest antagonist, bringing all, or almost all other evils in its train. It is not so essential, in the opinion of your committee, to keep the ground stirred, as is generally supposed, and by no means requisite to stir it deep; at all events, not to our light soil. If it be well prepared, deep plowing is not only unnecessary for any of our crops, but often highly injurious to them, while it rapidly exhausts the land by turning it up fresh under a burning sun. Much unnecessary pains is usually taken, and time lost, to work the plant in a particular way, under the supposition that it is a peculiarly delicate one. If it survives its infancy, few plants are hardier. It is often found to reach maturity in the alleys where the mules walk with the plows following and the laborer tramps backward and forward. Sometimes it will bear fruit in turnrows used frequently for wagons; while it really seems to derive benefit from being bitten down almost to the ground by animals; it will bear almost any usage better than it will that mortal enemy—grass.

The most critical operation in working cotton, is *thinning*. It should be done with great care, and if early, with the hand. In a dry year, it cannot be done too early after the plant is up. In a wet one it may be profitably delayed until it has begun to form, or even after. On the experience, observation and judgment of the planter, in this matter everything depends, as each year brings its own rules with it. Where circumstances are favorable, early thinning is of course the best. Some planters always top their cotton; others never do. Your committee are of opinion that it seldom or never does harm to do so; but whether it is worth the trouble is a doubtful question. Those who have no clearing, or other important employment for their hands, would lose nothing by devoting three or four days to this operation early in August; those pressed for time might gain by omitting it.

Too much pains cannot be taken in preparing cotton for market, for they are well remunerated by the additional price. The first thing to be attended to is to have it gathered free of trash. With a little care, wonders can be affected in this way; and hands with a short training, will pick almost if not quite as much without the trash as with it. It should never be gathered when wet; and here it may not be out of place to remark, that one of the very best sanitary rules of a plantation is, never to send out your hands to pick until the dew has nearly or quite disappeared. It saves time, in the long run, as well as health and life. Cotton should never be ginned until the seeds are so dry as to crack between the teeth. If damp, it is preferable to dry it in the shade, as the sun extracts the oil and injures the staple. If, by accident however, it gets wet, there is no alternative but to put it on the scaffold. It is of great importance to sort the cotton carefully into several qualities, in ginning and packing,

for by mixing all qualities together, the average of the price is certainly lowered. A few old hands or very young ones, breeding women, sucklers and invalids, will earn excellent wages in a gin-house, at this occupation. Neat packing is of no small importance in the sale of cotton, and no little taste may be displayed in making the packages. The advantage of square bags are universally known, and the committee are astonished that any other should ever be made now.

EVERY KIND OF MANURE IS VALUABLE FOR COTTON.—Every kind of composite, green crops turned in, cotton seed, and even naked leaves listed and left to rot, improve this crop. When planted on cotton seed, and sometimes on strong stable manure, it is more difficult to retain a stand, owing probably to the over stimulus of these strong manures; so, on leaves, unless well rotted, the cotton will long continue to die, in consequence of the leaves decaying away, and exposing the root too much to sun and rain. These difficulties may be avoided by a little pains, and by no means justify the opinion entertained by some, that cotton should never be planted in freshly manured land. The only question is the cost of the manure. A great deal may be made on every plantation, without much trouble or expense, by keeping the stables and stable-yards, cow and hog-pens well supplied with leaves and straw. And also from pens of corn-cobs, sweepings from negro and fowl-house yards, and rank weeds that spring up about them, collected together and left to rot. Whenever the business is carried further, and a regular force is detached to make manure at all seasons, and entirely left out from the crop, it becomes the owner to enter into a close calculation of the cost and profits. In many agricultural operations, such a course the experience of all countries have proved to be profitable; but these operations partake rather more of the farming and gardening than the planting character; and whether the same method will do for the extensive planting of short staple cotton, remains, in the opinion of our committee, yet to be tested. If anything like an average of past prices can be maintained, it is certain that more can be made by planting largely, than by making manure as a crop. If, however, prices continue to fall, and the growing of cotton be confined to a few rich spots—those susceptible of high manuring—then our whole system must be changed, our crops must be curtailed, and, staple labor losing its past value, the comparative profit of cotton and manure crop will preponderate in favor of the latter. As a substitute for manuring on a large scale, resting and rotation of crops is resorted to. In our light level land the practice of resting cannot be too highly recommended; and by a judicious course, such as resting two and planting two or three years, our lands may not only be kept up forever, but absolutely improved. From rotation of crops, but little is gained for cotton. After small grain, whether from the exhausting nature of that crop on light lands, or because the stubble keeps the ground always rough and porous, cotton will not do well. After corn, it is difficult to tend, as from our usual manner of cultivating corn, grass is always left in full possession of the field. It does better after cotton, or after a year's rest. Rest is the grand restorer, and the rotation chiefly required in the cultivation of cotton."

THE MALVA AS A FORAGE PLANT.

EDITOR CULTURIST.—As the subject of producing food for cattle is now engaging the attention of agriculturists, allow me to suggest an idea that I think would be good if carried out. I presume that it is well known to every one that has seen the malva, that cattle and horses are very fond of them; they will eat not only the leaves ravenously, but if very hungry, even the sprigs and limbs—they seeming to have juice enough in them to pay for mastication. Therefore, for green food for cattle and horses during the dry season, I propose to plant a field with malva plants, say four to six feet apart each way; so that, at two years old, they would almost meet to cover the field entirely; when, at that age and at the season of the year when cattle would most need them, turn them into it. They would eat the leaves first, then the stalk, if there should not be leaf enough to satisfy them; but, if there was but just enough cattle for the fodder, it would grow about as fast as they would eat it, until the winter's rain set in to make pasture of their grass lands, when they could be turned out of the malvas, and had they been much broken down, prune them clean, and leave them to flourish again, ready for your stock in the next dry season. Experiment only would show how much the land would bear before being impoverished; but I know that they flourish wonderfully on the shallowest, sandy soil of our hills here. There is a great deal of gluten in the plant. I don't know how that would effect milk or dairy cows for the market, or for butter; but I should think the experiment would be worth the trial by dairymen. I think they would answer another very important need on many farms in our state, as a plantation of a few acres of them in two years, would furnish all the fire-wood needed for the house.

BENICIA, April 16th.

O. H.

We have frequently noticed with what avidity animals consume the forage of the *malva*, whenever they have access to it; but it never occurred to us to grow this exceedingly hardy, broad-leaved shrub as forage. Cattle and horses will always—to use a common saying—“if they can steal it,” reach over a fence and feed upon almost any description of plant or tree leaves; but turn them into a forest of the same trees, and they will soon discard them. We are of the opinion, however, of our correspondent, that something of good to the interest of the California agriculturist and stock-raiser may grow out of the suggestion. Why not cultivate perennial shrubs and low growing trees, the leaves of which are suitable for forage, as well as to grow grasses? The malva is ever green in our climate; its leaves are eagerly eaten by animals whenever they can get at them; its habit of growth is low and spreading, and might be grown even more so by early cutting back the leading top shoots. A field of the malva, planted just close enough that when three or four years old would nicely cover the ground, or presenting mere paths of open space among them, for animals to range, would be a beautiful sight, and we are not at all certain but it might prove a profitable investment. What the effect of denuding the malva of its leaves at cer-

tain seasons of the year would be, is a question that experiment would soon solve. Who will try an acre of the malva, with a view of testing its properties and usefulness as a forage plant or tree?

A NEW AND VALUABLE WINTER PEAR.

WHO will be the first to secure for California, the following valuable acquisition—probably—to our list of fine pears? The *Michigan Farmer* speaks in this wise of the BEZI MAI: M. de Jonghe, of Brussels, has published a notice of a new and very valuable winter pear which he has originated and named the BEZI MAI, because it does not ripen till the month of May. The tree has now fruited for four years, and he has observed with great attention its quality, and, after two years' more observation, he thinks he will be in a position to complete the description of this new acquisition to the list of pears. The seedling, when it first fruited was eleven years old. The fruit gathered from the twenty-third of September to the twentieth of October, all ripened exactly in May following, and even those which were blown down were so firm that they suffered no injury, but ripened with the rest. The flesh of the ripe fruit is described as being as buttery as the Easter Beurre, and as close as that of the Glout Morceau, and free from grit. The tree is thus described:

“At three feet from the ground it is four inches in diameter; at seven feet, to which height the stem is clear, the branches are allowed to proceed to form the head, the extremity of which is twenty feet high. The branches are firmly attached to the stem, and extend in a somewhat horizontal direction, the extremities of the shoots being slightly curved. All along the branches will be found long, slender spurs which form fruit buds in the second year of their growth. The shoots, which form latent eyes, which become developed at the base where a shoot has been removed, also bear fruit. This particularity is also found to exist in trees in the nursery, grafted for experiment on the pear as well as on the quince stock. In general, the wood of the variety is not thick, but it is hard. The bark of the stem and lateral branches is of a brownish green tinged with gray. The color of the shoots is a shining, brownish, olive green, more or less dark, and sprinkled with linear gray specks. The wood buds are prominent, thick at the base, and pointed; of a coffee-brown color with gray pubescence. The leaves are more or less lanceolate, of a shining green color on the upper side, somewhat channelled, the margin finely toothed. The flowers are large, forming a cluster of seven or eight. The fruits, like those of all hardy varieties, set well. In the end of May, 1857, '58, '59, I observed clusters of three, four and five fruits; and in the end of July, or in August, of a strong wind like that of July, 1857, the large fruits which were not supported by leaning against the branches did not hold on. This is a drawback to the culture of this variety as a high standard. It would, therefore, be necessary to cultivate it as a dwarf, either on an espalier or against a wall, where it would attain a large size. Very fortunately, however, the variety forms very fine dwarf pyramids, even in the first year, on either the pear or quince stalk. I know few varieties which unite better with the quince, and form on it as well as on the pear stalk such handsome pyramids.”

RHUBARB WINE.

DURING the last summer, several experiments were made in different sections of the state, in the production of wine from rhubarb, or the common pie-plant. In every instance in which the attempt was made, so far as we have heard, very good wine was the result. We had the opportunity of testing several samples, and really, to our taste, they were quite equal to, and indeed superior, to any sample of grape wine, of the same age, we ever saw. This is one of the peculiarities of rhubarb wine—its early maturity; this fact, however, obtains in relation to nearly all the wines in which sugar from the cane is used to supply the deficiency of the saccharine principle in the fruit or product used in its manufacture.

It may be all right enough to call all beverages wines, made from fermented mixtures of sugar, water, and fruit juices or acids; but, however palatable and perhaps wholesome these beverages may be, and however abundantly and easily produced, they are still very far from being grape wines; nor can they be as cheaply produced. That which gives the grape its decided superiority over all other fruits in the production of fine, as well as cheap wine is, that it contains its own sugar, as well as every other ingredient necessary for a palatable and permanent wine, one that will continue good for years, and in regard to many kinds, improving with age. The cost of sugar in the manufacture of wines from other products than the grape, will always be a drawback that will enable the juice of the grape to maintain its superiority over every other fruit juice in the manufacture of wine.

As showing, however, how fine a wine can be produced from the rhubarb juice, in a climate too cold or unpropitious for successful grape culture, we append the following.

“M. P. Cahoon, of this city, widely known for growing the Mammoth pie-plant, has been the means of bringing the manufacture of rhubarb wine into general notice. A few months since, he sent a quantity of his wine to J. R. Wilson, of Washington city, a scientific gentleman largely engaged in the business of horticulture. Mr. Wilson acknowledged the receipt of the wine, and gives his opinion of its qualities; we are allowed to take the following extract from his letter:

“‘About four-and-twenty gentlemen, thus far have tested it, and, excepting one, there has been no doubt of its grape flavor, and that one liked the wine. All are highly gratified and surprised at the product—some said it resembled Sherry, some Sicily Madeira, some Teneriffe. It is very important to me to be certified by your assurance, that the article sent me is rhubarb wine, or simply rhubarb juice, water and sugar, unmixed with any juice of the grape. It seems to the uninitiated scarcely to be believed—hence, I desire your statement of the fact.’”—*Kenosha Telegraph*.

“We had about eighty gallons of this wine manufactured last season, and find it a very nice article; though, yet comparatively new, it is admired by all, and often pronounced superior to much that is ostensibly imported and sold at five times the cost of this native article. We have little doubt, but when two years old, it will equal

any grape wine, of the same age, either foreign or native ; and if so, this will prove the way for all the world of making wine, instead of with grapes in this climate. Rhubarb is grown as easily, and vastly more abundant than potatoes—a single acre may safely be estimated to furnish material for a thousand gallons ; and when once planted and one year started it is ready for use.

“ We know of no project in a small way, in which more money could probably be made. A thousand gallons of good wine from an acre, worth two dollars per gallon, counts up largely after deducting all expenses of manufacture. Rhubarb has also other and ample merits to warrant its cultivation to a vastly greater extent than is now done. Every farmer and family should at least have two or three dozen roots of desirable varieties, for family use. We know of few articles of garden culture of greater value.”—*Editors Wisconsin Farmer.*

EARLY HARVESTING OF WHEAT.

A LARGE quantity of wheat is annually wasted that might be saved, if farmers would give more attention to the *time* of harvesting. The practice is too prevalent of waiting till the grain is fully hardened upon the straw before the cutting commences ; as a consequence, where large quantities are to be harvested, it is next to impossible to procure it all done, before much of it is so dry that a large quantity is shelled out by the act of harvesting and handling, previous to its reaching the threshing machine.

Repeated experiments have been made to test the relative value of wheat cut early and late, as regards its yield in weight per bushel, and the quality and quantity of the flour produced. Wherever these experiments have been fairly conducted, they have invariably resulted in showing that a positive gain attends the practice of early cutting. Extremes in this, as in everything else, should be avoided ; wheat can be cut too early as easily as too late ; but nothing like the loss ever occurs, or will be likely to occur, from too early cutting, that annually arises from deferring it to too late a period. It is difficult, we know, to prevail upon farmers to change their practice in this respect, because they are satisfied—though often without ever having tried the experiment—that they know as much about the proper time of cutting wheat, or performing other farming operations, as *we* can tell them.

The fact is, we don't ask you to believe alone what we tell you ; but, in giving this advice about wheat, we are not only giving our own experience, but that experience is endorsed by many of the best wheat-growers of all countries. A few of the reasons for adopting the practice are these : The grain will have more flour in proportion to the bran, because the cuticle, or bran of wheat, thickens as the grain approaches maturity, and if left so long that the entire straw becomes fully dried before cutting, it is not only thicker, but of a darker color. Early cut wheat, for this reason, is heavier than late cut ; it will not shell out and waste as badly as when the straw is fully ripe ; and finally, the straw is worth twenty-five per cent. more for

feeding to stock; and yet, not the least among the advantages of the practice is, that it enables the harvester to commence several days earlier than he otherwise would. The proper time of cutting must be determined by every-day inspection as the grain approaches maturity. Some who favor early cutting say, that the proper time is when six or eight inches of the stalk below the ear has turned yellow, and the grain, when shelled out in the hand, can be mashed with the thumb, being nearly as pliable as very stiff dough. Others say that as soon as the wheat is so far matured that when mashed under the thumb, no appearance of milk remains, is not too early to commence; and yet, others are governed quite as much by the apparent maturity of the straw, with less reference to the condition of the grain. Edward B. Hunt, in the *Indiana Farmer*, says:

"In 1859, I cut my wheat as soon as the straw had turned yellow ten inches from the ground, and think that nearly all the grain was saved, which would have fallen, had the wheat been left standing until the grain was fully hard; and sixty-three and one-half pounds was the weight per bushel. The grain was tramped out by horses. The straw was not broken very much, but was tough, and could be pitched like short hay. I put the straw under shelter when threshed, and am using it in the place of hay. My horses and cattle seem to be in as good condition as when I fed hay, and they eat it well. I hauled my wheat from the field into the barn in about two weeks after cutting.

"In 1857, I cut ten shocks of wheat seven days before wheat was thought to be ripe, and found the berry full and heavy."

The fact that many of our most careful and observant farmers are practicing upon the plan here advocated, with uniform success, should induce others to try what many seem determined to look upon as mere theoretical "book-farming," applied to the harvesting of wheat.

ANOTHER INSECT ENEMY.

EDITOR CULTURIST:—Inclosed you will find some specimens, not of silver ore, but of a little miner who runs his tunnel into our apricot and peach trees, thereby producing death speedily. In examining the little fellow with a common pocket microscope, he appears to be of the bug kind; but his form seems quite different from anything described by either Elliott or Downing. He is forwarded to you for the purpose of giving a note of warning to those engaged in the cultivation of the delicious fruits above mentioned, and if possible, eliciting information that may lead to detection and remedy.

Some time ago, it was discovered in some of the gardens in this place, that peach and apricot trees were in a dying condition, and it was supposed that over irrigation was the cause. One man cut down a number of his peach trees. This afternoon, my neighbor, Mr. Churchill, who is a subscriber for your valuable magazine, discovered a couple of limbs on an apricot tree, apparently dead, the fruit having fallen off.

On examination, he found a small perforation, and on following it up, he found the enemy. From appearances it would seem that some poisoned secretion was imparted to the wood, causing the death. There is no girdling or visible removing of the wood or bark, saving only the very small perforation itself, and that is made generally in a direct line towards the center of the limb or tree, but not generally reaching to the center. A sample of the wood as perforated is sent, and in it you will likely find a live bug ensconced, as one of them entered his hole before the envelope was closed. Unless a remedy is found, I fear there will be sad havoc among those fine fruits; and the insect is so very small, and his operations so deadly, that I fear he will be hard to conquer. Please present this matter for the consideration of your readers. The trees supposed to have been killed by over irrigation, were found, on examination, to have been killed by the insect.

J. SHARP.

IONE CITY, NEVADA CO., April 10th.

The insect is new to us. On mentioning the matter to a horticulturist of no mean pretensions in the line of fruit-growing, he very carelessly remarked: "Oh! nothing but the borer." We can assure our pomological friends that it is not the "borer," though he may be a great bore, and bores his way into our finest fruit trees, to their certain destruction. The insects sent us—which were received in good condition—are not larger than a small flea, and seem to be in their perfectly developed state, having wings under a wing-sheath, peculiar to certain species of the insect tribe. The suggestion of our correspondent, that the death of the tree or limb is from some poisonous secretion of the insect, is doubtless true, as the mere puncture could not produce it; for a hole bored with a bit, the sixteenth of the diameter of a limb, quite through it, does not necessarily kill it; whilst the bore of this little rascally intruder, without even reaching the center of the limb, kills it outright. Fruit-growers will do well to be on the watch for this pest, and where found, carefully study his habits, with a view of discovering a preventive of its ravages.

IRRIGATION IS EXTENDING.

BECAUSE some one told Horace Greeley, and he told the public, that fruit trees could be grown without irrigation as well in California as elsewhere, a perfect storm of, "I always knew it," and "I told you so," was heard from every quarter of the state, and almost every man who had a bearing fruit tree, seemed to have suddenly discovered that it had been grown, and was productive without irrigation; hence, the declaration of a cotemporary, that "irrigation is worse than useless." But it seems there is something more of irrigation, as effecting the agriculture of California, or indeed of any country, than just merely pouring a bucket of water round a tree. Irrigation, we admit, is not needed in localities where the soil is sufficiently moist to grow trees or field crops without it; but there are thousands of acres of rich lands

adjoining the alluviums of our valleys, that can only be made available to their fullest capacity for production, by a judicious and abundant artificial irrigation. All our great valleys, through which streams meander, will sooner or later be brought under systems of irrigation, so important to the welfare of communities, as to be governed and regulated by the laws of the land, which will be enacted for the purpose.

The Cache creek valley and adjacent lands are even now about to receive the benefits of systematic irrigation. Not long since, the Yolo Agricultural Canal company was organized—the object being to convey the waters of Cache creek over the adjacent country for the purpose of irrigation. The work of excavation has progressed, we learn, as far as Cacheville, at a cost already of about sixteen thousand dollars. The canal is eleven feet wide at bottom, with grade of three and a quarter feet per mile, giving the water a velocity of three miles per hour, and discharges a volume equal to twelve feet in width by three in depth, or sufficient to cover one mile square, six inches deep, every twenty-four hours. Nearly thirty thousand acres will be made to feel the life-giving and fertilizing influences of irrigation from this canal, doubling the annual product and consequent value of the lands. The company propose to irrigate at fifty cents an acre—the cheapest fertilizer, at that rate, that can possibly be applied; in fact, irrigation is but another name and guarantee for perpetual fertility.

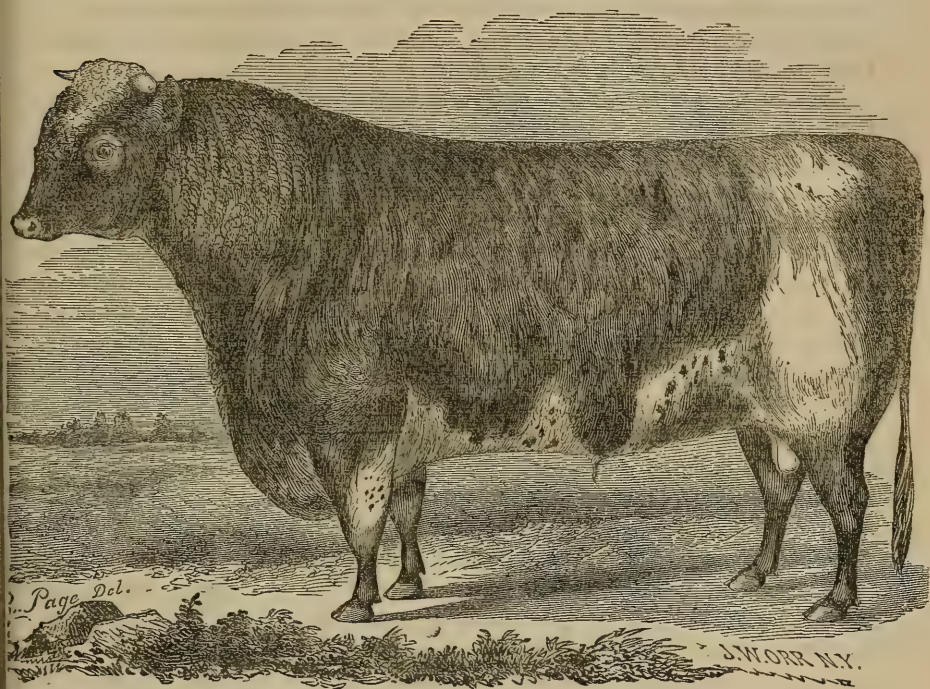
It will not be many years before the whole great valley of the Russian river, as far as desirable, will be subjected to a system of irrigation from the waters of that river of falls and rapids, and thousands of acres be made to double and treble their present annual yield of fruits, vegetables, grasses and grains. Other rivers, too, than those named will be made ere long to deposite their fertilizing properties upon adjoining lands, rather than be permitted to convey them longer to the ocean or its bays. Systems and works for the purposes of irrigation, as important as those now marked only by the extent of their ruins, upon the Gila and throughout Central America and Mexico, will yet be seen hanging upon the sides of our mountains, with the silvery sheen of their waters leaping to the valleys.

But not alone will the benefits of irrigation be felt in the plains and valleys, but along the foot-hills, countless acres that are now but little else than arid solitudes, from June to November, will yet be made the recipients of fertile waters, that instead of bearing away the soil from the golden placer, will be made to contribute to its powers of vegetable production, starting into life, and clothing with a living green of vine and tree, the countless portals of future mountain homes. The miner will lay down the pick and take up the pruning-knife; whilst the oft reiterated exclamation, "I am going home," will refer only to yonder vine-clad hill-side and its cottage of loved ones. Even *gold*, when compared with the benefits which California is yet to derive from irrigation, is as dross. Capitalists will ere long turn their attention to this subject, as one deserving their careful consideration, entirely beyond what the Bensley water company is doing towards irrigating the stomachs of the San Franciscans.

FOLLOWING NATURE IN AGRICULTURE.

NEVER was there a saying with more of truth in it than that made by a writer in the present number, that "poor dame nature is dragged in by the ears to stand godmother to all the bantlings that the busy brains of our numerous horticultural writers bring forth. Let it only be proved, or rather supposed, that such a process is founded upon a natural law, or upon what we conceive to be a natural law, and the writer imagines his argument to be irrefutable." For the benefit of those who would lay so much stress upon doing things according to nature, or because nature does it; such as giving to ripening strawberries an artificial shower, as suggested by our cotemporary of the *California Farmer*, we remark that, in other countries than California, nature may dash her rain showers upon the ripening strawberries, wetting, souring and sanding them; but here, she seems generally to understand herself better than to do it often, and here we have the best berries, and the longest strawberry season of any country in the world. In this, then, we would not do as recommended by the Colonel—shower our strawberries at the time of ripening—because nature does it in some other country than this. Nature never cuts back the grape vine annually to three or four buds; but the successful grape-grower does it. Nature seldom cuts back or heads in the peach, plum or apricot trees; but very many of our best fruit-culturists do it. Nature seldom transplants a tree or mutilates its roots, or propagates from sections of either limb or root; nurserymen do it. Nature sows most of her seeds directly upon the surface of the ground; shall we follow nature here? We might go on almost ad infinitum in showing up the absurdity of making our horticultural practices, in all cases, conform to the operations of nature. In some things, it is very well to *follow nature*, if you will use that term; whilst, in others, it will be better to *lead nature*, or do what experience has shown to be the best practice, whether nature does it in that way or not.

There are some few things that others rely upon, or expect nature to accomplish, that we doubt very much whether she ever troubles herself in the least about. We don't believe the "changes of the moon," as they are called, have the slightest effect upon the weather; if it does, the moon has more than its match in producing even a shower of rain in California, for months together every summer; and then, when it rains as it did in the winter 1852-3, for forty-six days together—just six days longer than was required to set Noah's ark fairly afloat—the moon was utterly powerless in causing a cessation of rain for a single day. We don't believe there ever will be any material change in the climate of the Pacific coast country, so long as it is governed—as it certainly is, to a very considerable extent—by the great ocean and wind currents of the Pacific seas, north and south, making their way inland. And finally, we do not believe the artesian wells of Santa Clara valley, or any other country in which they are situated, will ever dry up, or render waste such place or country, or do injury to its vegetation by supplying the waters of irrigation. Others may differ with us on all these subjects, without irritating us in the least; but the charge of our advancing new doctrines upon the subjects we discuss, seemed to require that we should, to a certain extent, define our position.



IMPROVED BREEDS OF CATTLE—SHORT-HORN DURHAMS.

EDITOR CULTURIST:—I have noticed lately two or three articles in your widely circulated periodical, in praise of Devon cattle, recommending them as the best adapted to our California climate, the forage of our mountain districts, and consequently, as a cross for the improvement of our California stock, and give us your experience in their growth and value upon the hills of New England. Will you allow me space for a few words in behalf of the *improved* short-horn, and to give you and your readers a little of *my* experience on the *hills of California*.

I have, since the year 1852, been more or less engaged in stock-breeding and raising, in the northern section of this state. I have had no experience here with pure blooded stock—I believe there to be little, if any such as yet in the state—but with short-horn graded stock, I have, and have invariably found that they keep in good condition upon a smaller amount of food, than any of the native or common run of American stock that you meet with in California. During the fore part of last winter, I had a small band of cattle running upon the foot-hills of Butte county. They were a mixed lot, composed of short-horn grades, common American, and a cross between them and the native stock. Of the latter kinds I lost—I am ashamed to say—eighteen per cent. by starvation; but of the graded stock, *not one*. In consequence of their half-starving condition, during the time of gestation, many of

the common cows are dropping small, deformed calves that die as soon as born. One of my neighbors has lost fifty per cent. of his calves this spring from the same cause. I have not yet lost a calf from a graded cow.

You say your experience indicates that the Durhams or short-horns are a *pampered* breed, and not suited to California, except where they can have luxurious food and treatment. It may be the case that, in many instances, they *are* pampered, both in New and in Old England; but, in the latter place, it is certainly not so in all cases. Some months since, I wrote to a friend of mine near Liverpool—one of the best judges of stock in Great Britain—to send me out a bull and cow of the best Ayrshire breed, and also of the *pure blooded, improved* short-horn. In answer, he strangely advised me to have nothing to do with the Ayrshires; said that he could select me a short-horn bull and cow from a milking family, that would equal, if not surpass any Ayrshires for dairy purposes, and in fattening, would give far more beef for an equal amount of food; that, as my object was to improve my California stock as rapidly as possible, a short-horn bull was much the best adapted for the purpose, as it was a well known fact, that they imparted to their offspring the peculiarities of their breed and form more completely and surely in one cross, than an Ayrshire or Devon bull would in two or three.

Under date of December 9th, he writes: "The bull I have offered for was bred by Mr. Brune, of Braithwaite; his sire, a bull *hired* from Booth at two hundred guineas the season. Mr. Willis, of Carperly, whose stock I also saw, had Booth's 'Lord of the Valley,' also at two hundred guineas. I was surprised to find these valuable bulls and herds of cows out in the fields *day and night*, at this time of the year, and in a *high, cold* country, and getting no food except the frosted grass; and yet, all in excellent condition. They find the cows breed much better when so kept, as they have such a tendency to lay on fat when better fed."

I am not importing short-horns for sale, but for the improvement of my own stock; and write this merely from a desire that others may, if they please, reap the benefits of my experience; and to show them that it is possible to select from herds of the *purest blooded and most valuable* short-horns, bulls and cows that have not been pampered and luxuriously treated, and that they may not be led away too easily to believe that there is nothing like Devons.

A SUBSCRIBER.

We are very glad to hear so good an account of the short-horned crosses in California, and still better pleased to know that we are to have the full blood direct from first hands. Doubtless full bloods may be obtained in the Atlantic states, but if imported directly from Great Britain, the probability is that, with the care likely to be bestowed by the agent of our correspondent, in the purchase of the animals ordered, California, or Butte county, will be in possession of enviable blood in the line of improved breeds of cattle, at least in the direction of improved short-horns. If the crosses of our improved breeds upon the natives, produce a hardier animal, better suited to the conditions of our climate and forage than the old native breed, may we not expect that the full blooded, imported stock may be even better than though

mixed with a single grade of native blood? We can see nothing to be gained in a continuance of native blood in ill-formed carcasses, unless some one good quality can be perpetuated; and if they do not possess even the quality of hardihood, or the powers of subsistence upon a scanty forage, we can hardly conceive of the least use in perpetuating the breed by cross upon or with better blood. We shall be pleased to hear from our correspondent again, upon any subject he may feel disposed to address us.

ART, SCIENCE AND INVENTIONS.

RESULTS OF ART AND SCIENCES.—Sir David Brewster, the eminent Scotchman, whose successful researches into natural science have covered his name with universal honor, was lately inducted into the office of principal of the University of Edinburgh, to which he had been unanimously elected. On that occasion, he addressed the professors, graduates and matriculated students of the University, as well as a large crowd of other dwellers in the Scottish metropolis. What he said upon the indebtedness of mankind to the arts and sciences is so true that we take pleasure in presenting it here. Speaking to the students, Sir David Brewster said:

“There is only one other branch of study to which I am anxious to call your attention. The advances which have recently been made in the mechanical and useful arts have already begun to influence our social condition, and must affect still more deeply our system of education. The knowledge which used to constitute a scholar, and fit him for social and intellectual intercourse, will not avail him under the present ascendancy of practical science. New and gigantic inventions mark almost every passing year; the colossal tubular bridge, conveying the monster train over an arm of the sea; the submarine cable, carrying the pulse of speech beneath two thousand miles of ocean; the monster ship, freighted with thousands of lives; and the huge rifle gun, throwing its fatal, but unchristian charge across miles of earth or ocean. New arts, too, useful and ornamental, have sprung up luxuriantly around us. New powers of nature have been evoked, and man communicates with man across seas and continents, with more certainty and speed than if he had been endowed with the velocity of the race-horse, or provided with the pinions of the eagle. Whatever we are, in short, art and science surround us. They have given birth to new and lucrative professions. Whatever we propose to do, they help us. In our houses they greet us with light and heat. When we travel we find them at every stage on land, and at every harbor on our shores. They stand beside our board by day, and our couch by night. To our thoughts they give the speed of lightning, and to our timepieces the punctuality of the sun; and, though they cannot provide us with the boasted lever of Archimedes to move the earth, or indicate the spot upon which we must stand, could we do it, they have put into our hands tools of matchless power by which we can study the remotest worlds; and they have furnished us with

an intellectual plummet by which we can sound the depth of the earth, and count the cycles of its endurance. In his hour of presumption and ignorance, man has tried to do more than this; but, though he was not permitted to reach the heavens with his cloud-capt tower of stone, and has tried in vain to navigate the aerial ocean, it was given him to ascend into empyrean by chains of thought which no lightning could face and no comet strike; and, though he has not been allowed to grasp with an arm of flesh the products of other worlds, or tread upon the pavement of gigantic planets, he has been enabled to scan, with more than an eagle's eye, the mighty creations in the bosom of space—to march intellectually over the mosaics of sidereal systems, and to follow the adventurous Phæton in a chariot which can never be overturned.—*Life Illustrated.*

NEW COMPOSITION FOR BLASTING ROCKS.—A Frenchman named Detrets is said to have invented a new compound for blasting purposes, composed of 52.5 parts of nitrate of soda, 27.5 parts of spent tan bark, and twenty parts of powdered sulphur. The niter is first dissolved in boiling water, the tan bark is then added and thoroughly mixed while the solution is hot, and the sulphur is afterward added in the same manner. The mixture is then dried and is ready for use.—*Id.*

THE LIME LIGHT.—A new, brilliant and very economical light has been recently tested on a large scale at the Crystal Palace, London. It is described as more powerful than the gas from coal, giving an intensity of brightness, with steadiness, continuity, and diffusiveness. In short, that it is every way practically available for the ordinary purposes of life. The new light is obtained by projecting a jet of oxygen and hydrogen, or oxygen and carburetted hydrogen gases combined upon a surface of lime, and so regulating the supply and protecting the lime from crumbling away as to insure with perfect continuity a maximum brilliancy of intensity. The power of illumination is immense—a single jet of medium size being equivalent to the light of four hundred wax candles of four to the pound. It is represented to be peculiarly adapted for coast lights, steamers, sailing vessels, railways, signals, bridges, wharves, factories, churches, public rooms, squares, large and important thoroughfares. For its portability, it is eminently adapted for military operations in the field, both in attack and defense of important positions, as well as the sea generally. On the score of expense the saving is very great. The lime light costs two cents, and oil thirty cents for the same amount of illumination.—*Railway Times.*

SIMPLE FARM IMPLEMENTS.—We have called the attention of inventors to the necessity of simplicity in inventions, and in no department in which human ingenuity is called forth is simplicity more indispensable than in implements intended for the farmer's use. Machinery for manufacturing purposes may be expensive; it may be somewhat complicated, and yet, if it is the best the market affords, and does its work with a satisfactory margin of profit, capitalists may be found to pay the expense of construction, and engineers to run and keep it in order. With the farmer it is, in

most cases, different. The majority of farmers are men of limited means, and as most of the implements made for their use are only of value to them during certain brief portions of the year, they cannot afford to pay for expensive machinery, with, perhaps, the exception of a few of those who farm on an extensive scale. With the great mass of farmers it is not only a question, which is the cheapest machine, but also whether any are sold at a price which, in their circumstances, they can afford to pay. Another thing to be considered is, that every farmer is, of necessity, his own engineer, and the machines he uses must be sufficiently simple that he can, in ordinary circumstances, keep them in order, and that his hired men, Patrick and Hans, can work them. If they do not meet these requirements, he is obliged, as a matter of necessity, to adhere to the old system of hand labor. And yet, for some of the operations of the farm, machinery is almost indispensable. In some of them the question of time comes in—the work must be done then, or a loss is the consequence. If we go to the country in the harvest season, we shall find that it is almost impossible for the farmers, with all the help they can well employ, to keep pace with the maturing of their crops. They commence before the grain is fairly ripe; the farmer urges on his men in the field from early in the morning till late at night; while the “gude wife” lends her encouragement by loading her table with the best and most substantial food her larder affords; but, in spite of all this urging and coaxing; in spite of all the power the force employed can bring to prevent, the last of the crop when reached is too ripe to be gathered without loss. We have before alluded to the particular necessity of more simplicity in the construction of machines for harvesting purposes. Machines of this kind are too complex, altogether. A good mowing and reaping machine costs a hundred dollars, more or less, and is a perfect pile of machinery, or at least must have that appearance to the farmer. The result is, that many farmers never even saw one, and a much larger number never owned one, and never will till a simplified construction shall bring them more within their reach. We believe that such a construction is possible and practicable. To begin with, the machinery necessary to give a rapid vibration to the knives, costs a large sum of money, is expensive, and in some instances considerably complicated. We believe that this machinery may, by ingenuity, be dispensed with altogether, and fixed knives to be so arranged as to do the work successfully. If this can be done, it will be one great step in the way of progress in this class of useful inventions. It will dispense with the greatest cost of this class of machines. Let inventors try what they can do, and give us the result of their labors.—*Life Illustrated.*

OILING HARNESS LEATHER.—Oils, when applied to dry leather, invariably injure it; and, if to leather containing too much water, the oil cannot enter; wet the harness over night, cover it with a blanket, and in the morning it will be damp and supple; then apply neatsfoot oil in small quantities, and with so much elbow-grease as will insure its disseminating itself throughout the leather. A soft, pliant harness is easy to handle, and lasts longer than a neglected one. Never use vegetable oils on leather; and, among the animal oils, neatsfoot is the best.

DURATION OF VITALITY IN SEEDS.

THAT some seeds, under accidental circumstances, have an almost indefinite period of vitality, is evident from the fact that grains of wheat, taken from the hands or the wrappings of Egyptian mummies, several thousand years old, have vegetated during the present century. But such things are exceptions to the general rule. How, then, may we ascertain, with considerable certainty, whether the seeds we purchase are worth the money? Many experiments have been tried, and reports made, but not always with great accuracy. The following account is the most reliable we can present. It is understood, of course, that the seeds are kept under good circumstances—never in a hot, damp atmosphere.

Cabbage seeds, cauliflower, broccoli and savoy, good for four years. Lettuce, spinach, carrots, radish, onions, parsnips, peas, beans and other leguminous plants, good for one or two years. Beets, celery, cucumbers, melons, squashes, pumpkins, gourds and the like, good for ten and more years. Turnips, mustard, endive, sea-kale, asparagus, good for three or four years. Tree seeds, not to be depended on after the second year. Oats, wheat and barley, good for three or four years. Annual and perennial flower seeds, good for two or three years. Melon seeds have been known to vegetate when forty years old. Some careful gardeners prefer old seeds of the cucumber and melon tribe, because they think that new and plump seeds produce plants which make a rampant growth of vine, but bear little fruit, and that late in the season. Rye has been known to vegetate when forty years old; kidney beans, when one hundred; and raspberries when sixteen hundred (?); the sensitive plant when sixty years old.

And here, a word upon *seed-saving*. It is of the greatest importance for the farmer and gardener to do this work well, as upon it his success greatly depends. It is with this, as with the breeding of valuable stock. He who gives his attention to it and becomes successful, will attract the notice of others, and his seeds will command abundant purchasers at the highest prices.

To preserve seeds well, they should generally be gathered when fully ripe, be well cleaned, dried in the shade—not by strong fire-heat—and kept in a cool place, free from moisture. There are a few exceptions to this. Some seeds—as horse-chestnut, acorn, maple, evergreens, grapes, apples, etc.—should be planted before they become dry, else they will not vegetate well. All seeds liable to be attacked by insects, such as peas, turnips and radish should be occasionally examined, and passed through a sieve, to clean them from dust and other matters likely to attract vermin. It is of the greatest importance to label seeds carefully, at the time of gathering them. A number of sorts, as of melons and squashes, are gathered at the same time, and as they look much alike, they get mixed, or their distinctive names forgotten. When planting comes round, what confusion! And if the mixed seeds are planted, what increased confusion at the fruiting-time!

Since writing the above, we see it stated that the seed trade of Boston amounts annually to three millions of dollars. Ten tuns of turnip seed were sold there last

year, and the same of beet seed. Of mignonette, five hundred pounds only just supplies the market. The seed trade of New York and Philadelphia must be much larger—we have no statistics on hand.—*American Agriculturist*.

PREPARING POULTRY FOR MARKET

MESSRS. B. and S. Beatty & Co., of Cayuga county, New York, who are among the largest poultry breeders of the United States, furnish some general instructions, which are worth republishing here, on the mode of preparing poultry for market:

“Never kill a bird unless it is fat. Never cut off the head of a turkey or goose, but hang them by the heels where they cannot bruise themselves in the death-struggle, and stick them with a small knife, and bleed them to death. Ducks and common fowls, if decapitated, should be held or tied, and hung up to bleed to death. Never kill your birds with full crops—you will lose in price more than you gain in weight. Never strangle them, so as to leave the blood in. The best plan is to tie all kinds of birds to a line, drawn from post to post, or tree to tree, and stick them just in the forward end of the neck.

“You may pick all sorts of birds dry, if you don’t tear the skin; but you must scald them afterward by dipping them suddenly in and out of boiling water. Don’t scald the legs too much, whether you pick first or afterwards. Be careful of that. You must pick them clean, and the after-scalding makes them look plump and good.

“Never draw a bird. It is worth while to pay freight on the intestines, because the meat cannot be kept sweet long after they are drawn and the air admitted inside the body. It is a practice of some of the best poultrymen, after the birds are plucked, to plunge them suddenly into boiling water, and then immediately into cold water. This gives them a clean, plump appearance, and makes them look fat if they are in decently good condition when killed. Nothing, however, can make a poor bird look well, while ill dressing will make the best look poor.

“Lay the birds upon clean boards, in a cold room, till perfectly cool, but not frozen; as at all times, but especially when there is a probability of damp, close weather, great care must be taken that the animal heat is out of them; and then pack in boxes with clean rye and oat straw, so that they must not touch each other, about three or four hundred pounds in a box, filled full. Mark the contents on a paper inside, and on the lid outside, and direct it to your commission merchant plainly, and send it by express, and the invoice by mail.

“Never kill your birds on a damp day, nor pack them, if you can avoid it, except in a clear, dry, cold atmosphere; and try to avoid night work when you are tired and your help sleepy, and all of you careless. No matter how light your boxes are; they must look clean, or your poultry will not sell at first prices. In packing, press the wings close, and press the bird down hard on the breast, the legs extending back,

and fill each course full, and then lay on straw and another course of birds. Nail tight, but don't let a nail project inward to tear the bird. Give your name and residence in full on the bill in the box and on the invoice by mail.

"Never pack in barrels if you can get good dry-goods boxes, as the rolling of barrels injures the poultry. Well-packed boxes of well-prepared birds will keep sweet for a long time in cool weather, and may be transported by express or by rail road, and, arriving in good order, can be sold readily at the highest prices."

We trust that these remarks may enable our friends to secure a good market for their poultry, and cultivate a branch of trade to material profit and advantage. The late M. Soyer states the best way of killing poultry is to take the bird by the neck, placing the thumb of the right hand just at the back of the head, closing the head in your hand, your left hand holding the bird; then press your thumb down hard and gull the head and neck contrariwise, the neck will break instantaneously, and the bird will be quite dead in a few seconds; then hang it for a short time by the legs for the blood to flow into the head, which renders the flesh much whiter. "In France (he adds) we usually kill them by cutting the throat close to the head. Both methods are good with regard to the whiteness of the flesh; but I prefer the English method, not being so barbarous."

TAMING THE HONEY BEE.

BY J. S. HARBISON.

MOST authors have given it as their opinion, that the honey bee is capable of being taught submission, conveying the idea that it is necessary to tame them before they are of use to man. This opinion is so generally diffused amongst the people that a usual remark of persons visiting apiaries is, I suppose your bees know you, or they know you from strangers. I have never been able to discover any signs of recognition from my bees, they being just as apt to sting as those of a hive that I have seen and handled for the first time. If I am less frequently attacked by them than other persons, it is owing to understanding their habits and so can avoid many stings that I would otherwise receive.

That some persons are more liable to be stung than others, is owing to one or more of the three following causes existing:

1st. Color and texture of dress, dark clothes, or those of a hairy texture, particularly a fir hat, forms a prominent match for their keen sighted vision; hence, the wearer is liable to receive an occasional *dart*.

2d. Any quick motion, made in the vicinity of the hive, attracts their notice and causes them to attack the person making such motions.

3d. The smell of some perfumes, as well as that of some persons, is offensive to bees; also a person in bad health is more liable to be stung than when in good health.

Bees retain the same unchangeable habits, whether they are domiciled in the forest or in the finest flower garden—being, if any difference, more docile and less liable

to sting when handled for the first time than at any subsequent time. When a hive has been once opened and their combs disturbed, on returning to repeat the same operation a few hours or days afterwards, they remember it, and resent the intrusion. This proves that they are readily taught to be vindictive, and that but few are ever taught to be submissive. The latter can only be done by force or bribery, or the two combined.

ARMED FOR DEFENSE.—Nature has provided every animal and insect with means to protect and guard themselves or be guarded so as to ensure their proper increase. Hence, we find the honey bee armed and equipped in accordance with the above law. No less formidable weapon or less courage than that which they possess, would suffice to guard their young, in connection with a treasure that offers temptation to so many hungry creatures as honey is known to do. The season of greatest irritability is when there is least pasturage for them; for, while rapidly accumulating stores, they are more humble, and consequently handled with less danger and difficulty than at any other time.

HOW TO CONQUER THEM.—Smoke is the principal agent to be used. Various things are used for producing it, such as tobacco and rotten wood; but the most convenient, as well as the least hurtful to the bees, is dry cotton or linen rags, rolled up in the shape of a large candle; the size can be varied according to the volume of smoke desired. By setting one end of this on fire, it continues to burn slowly without flame, the smoke of which, if blown on the bees, is effective in subduing and driving them wherever wanted. Cold water sprinkled on them is also an efficient agent to effect the same purpose; and another way is to suddenly close up the entrance, and rap on the hive for a space of five minutes; on opening it, they are generally found to be subdued. This is owing to exciting their fears, causing them to fill their sacks with honey: they then have no disposition to seek revenge. Sweetened water or diluted honey is recommended to be given, by sprinkling it over the bees and comb. This is intended as a *peace offering to keep quiet*, while their works are being overhauled. This plan succeeds well where there is no danger of robber bees: it, however, requires more time than can well be afforded if time is valuable; hence, I much prefer any of the plans above recommended.

In my article—"Disease of Bees"—in your April number, an omission of two words occurred in the sixth line from the commencement. It should read: "It (foul brood) was brought into the state, and in connection with several apiaries, *previous to and* in the fall of 1859." As printed, the two words in italics were omitted; and *too* should have been *to*.

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**SUMMER DRINK.**—Pour a quart of boiling water over half an ounce of loaf sugar, and half an ounce of cream of tartar, with the outer rind of a lemon, either fresh or dried. When cold, strain for use.

# Editor's Repository.

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WE wish again to address a few words personally to our patrons, subscribers for the CULTURIST, relating to a matter of great importance to us. We are constantly in receipt of letters, asking us to forward certain back numbers of the CULTURIST, to make complete volume one or two, as the possessor wishes to have them bound. Now, we wish to show you just the condition of things. In the first place, we send off regularly to every subscriber, his copy monthly, as soon as ready. We presume they are received, read, and "laid upon the table." After this, comes the trouble: Many copies are doubtless carelessly lost, others are lent to neighbors and friends who forget to return them. In due time a general hunt is made for the back numbers, either to refer to some article they may contain, or for the purpose of eventually getting them bound. Numbers two, five, six and nine are missing, and forthwith a letter is dispatched to us with the information, and desiring that we will send the missing numbers. Now is this right, unless the money for the same is sent with the order? We intend to print extra copies, always sufficient to supply missing numbers, but they cost us money for paper, printing and binding, and are not procurable without it. Besides this, we lay aside a few full sets for bound volumes. It so happens that, with our rapidly increasing subscription list, containing so many that will go back to number one of the current volume, we find ourselves short of the first few numbers, having only enough of them to make good our full sets; now, if we have to supply to our subscribers one of these back numbers, it breaks up a full volume, worth the full year's subscription price, or five dollars. To such an extent are we called upon to supply back numbers, and no money sent to pay for them, we find it necessary to adopt the following rule, which will be strictly adhered to.

If a back number is worth sending for by letter at all, it is worth it within one month after the date of its issue. Our rule is, therefore, this: If a number is missing from having never reached the post office to which it is addressed, if the subscriber, within *one month* from the date of issue, will notify us that such missing number never reached the post office where directed, we will make it good; but if more than one month is allowed to elapse, and the missing number is ordered, the cash for the same must accompany the order to insure attention. We wish our subscribers and agents would be particular in this regard, as we find it absolutely necessary to make this a rule and adhere to it.

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FRONTISPIECE—EXCELSIOR BEEHIVE.—This is the new and improved beehive, patented by Asa Blood, in November, 1858. Its merits, as claimed, consist in its perfect adaptation to the habits and convenience of the bees, as well in the process of breeding, as in storing the honey. The wording of the claim, as patented, is as follows: "I claim the main or breeding core B, in enclosing case C, in combination with the honey cases D in cap E; the several parts being constructed and arranged in the manner and for the purpose specified."

The upper engraving shows the complete hive, with the cap containing the honey boxes, opened, with one of the honey frames partly raised, showing the manner in which they are taken singly from the honey boxes; or the boxes can be all taken out and replaced by others. The hive can be

constructed so as to admit of the front C, being opened. At the top of the breeding box, under the cap E, is a ventilator for allowing dampness or foul air to escape without entering the honey boxes, the effect of which is to preserve the honey pure.

The lower engraving shows the inside of the honey boxes, D D, and the breeding core B. This hive, we are informed, has taken the premium wherever exhibited at the Eastern fairs, over all competitors. It is simple in construction, cheaply made and easily managed, and is *the* hive—we are assured—for the novice, as well as the experienced in bee culture. It is now introduced for the first, in this country, and manufactured at the works of Messrs. Blethen, Market street, south side, below Second. Stephen Parks, San Francisco, is the sole agent for the manufacture and sale of this hive for California, Oregon and Washington territory. Address orders to Stephen Parks, 185 Mission street, San Francisco.

**STATE AGRICULTURAL SOCIETY.**—The board of managers for 1860 met March 13th. Present, Hon. T. G. Phelps, President; C. I. Hutchinson, Ex-President, L. B. Harris, Nathan Coombs, J. S. Curtis, Vice Presidents; O. C. Wheeler, Secretary; D. O. Mills, Treasurer; Wilson Flint and P. J. Devine, Managers.

The secretary read letters from Wm. Rabe and Dr. E. B. Harris, apologizing for absence from the meeting.

The president, on opening the business of the year, made a short and appropriate address, full of hope and promise for the society's future.

The regular meetings of the board were fixed, as last year, for the second Wednesday of each month, at 7½ P. M. It was also agreed to hold a meeting of the board every Tuesday evening during the session of the legislature.

On motion, the following committee was appointed to revise and report, as early as practicable, the premium list for 1860: Nathan Coombs, C. I. Hutchinson, J. S. Curtis, Wilson Flint, P. J. Devine, O. C. Wheeler.

At a meeting of the board, March 20th, the president announced the standing committees for the year as follows:

*Finance*—T. G. Phelps, N. A. H. Ball, *ex-officio*, E. B. Harris.

*Library*—O. C. Wheeler, *ex-officio*, J. S. Curtis, P. J. Devine.

*Publication*—T. G. Phelps, O. C. Wheeler, *ex-officio*, D. O. Mills.

*Visiting*—Cary Peebles, Wilson Flint, Wm. Rabe, E. B. Harris, O. C. Wheeler.

[As a silencer upon the insinuations of those who would seem willing to throw discredit upon the management of the affairs of the state society, we append the report of the committee, appointed to examine into the condition and reports of the society for the last year, and we desire that those of our cotemporaries who consider the state society as dead, and as "not meeting the wants of the agriculturists of the state," give it a careful perusal.—ED. CUL.]

**REPORT OF COMMITTEE OF INVESTIGATION.** *To the California State Agricultural Society:*—Your committee on the reports of the society and the general affairs of the same, respectfully report:

1st. That, from their own personal knowledge, as well as from the report of the board of Managers, there can be but one opinion among intelligent and right thinking men, in relation to the character of the annual fair of 1859; which is, that it was grand in its conception, magnificent in its character, and most triumphantly successful in its results.

2d. That the books, accounts and vouchers of the financial officers of the society have been kept in the most accurate and approved manner; every bill, and when necessary, every item of such bill, duly filed and numbered, and to correspond with which, vouchers bearing the same number, properly audited, are on file, both in the office of the recording secretary and treasurer.

3d. That whatever objection or diversity of opinion may exist in regard to the finances of the society, such objection and opinion must relate to the manner of the expenditure, and not to the faithful disbursement of the funds, either in premiums or for other purposes.

4th. That, in the opinion of your committee, the board of Managers, by their arduous and self-



sacrificing labors in behalf of the society, have given ample evidence of the integrity and sincerity of their motives in the management of the affairs thereof.

5th. That we find the city and county of Sacramento indebted to the society in the sum of \$7,450 95, which your committee have been assured will be returned to the treasury of the society.

6th. That upon the reimbursement of such amount, to wit : \$7,450 95, there will be \$2,200 or more in the treasury—there having been four hundred and odd dollars paid into the treasury since the seventeenth instant.

In conclusion, your committee recommend :

1st. A vote of thanks to the officers of the society and the managers of the annual fair, for the able and successful manner in which they have conducted its affairs.

2d. That the recording secretary and treasurer receive each the sum of five hundred dollars for services rendered.

3d. That, in the future management of the society's affairs, regard be had to economy and retrenchment in all its departments, to as great an extent as possible, consistent with its success.

A. H. MYERS, J. R. HARDENBERGH,  
WILSON FLINT, S. S. CURTIS.

I concur in the first four items and the last two recommendations.

R. D. FERGUSON.

Adopted unanimously.

The board of managers were authorized to fix the time for holding the annual fair at some time between the first of August and first of November.

On motion of E. B. Crocker, it was recommended to the board of managers that they hold a spring fair at some point on the bay, if they think it expedient, and the state of the finances justify it.

A vote of thanks, on motion of E. B. Crocker, was returned to Wells, Fargo & Co., for their favors to the society during the past year.

On motion of Mr. Winans, a vote of thanks was passed in behalf of the officers and members of the board of the past year.

The corresponding secretary being called for, came forward and addressed the society at considerable length ; after which, the president for 1859, C. I. Hutchinson, Esq., answered the call of the society by addressing them in a feeling and patriotic manner, and then, on motion, the society adjourned, *sine die*.—*Monthly Journal of the California State Agricultural Society*.

We are pleased to notice the zeal manifested by the officers and members of the state society to increase its usefulness and advance thereby the general interests of agriculture throughout the state. Nothing can contribute more to this end than a well conducted state institution ; and it is gratifying to see with what unanimity the committee of investigation reported in reference to its management during the past year. That the present year will witness a fair surpassing all preceding ones, will hardly admit of a doubt. Ability or effort will not be wanting, and we predict a success in keeping with former precedent, notwithstanding the efforts of one or more of our cotemporaries to defeat the efforts of its officers in their laudable endeavor to perpetuate the existence and usefulness of the society.

**AGRICULTURAL MEETING.**—The board of managers of the San Francisco Bay District Agricultural Society met yesterday, pursuant to call of the president, at the office of Samuel Brannan, Esq. Present—President Brannan, Vice Presidents Green, Lewelling, Jones, Cumming, Burtiss, Secretary Fargo, Treasurer Bond, and Director Center.

The secretary reported that he had discharged the duties entrusted to him, by notifying the officers of their election, procuring books and stationery for the use of the board, and publishing five thousand copies of the constitution and by-laws. The report was accepted, and the bills ordered paid.

On motion of Mr. Green, the chair appointed Messrs. Lewelling, Center and Pioche as members of the executive committee, to act with the president and secretary, as provided in the constitution. The secretary presented his official bond, with Henry Haile and John Center as sureties, and the treasurer presented his, with Samuel Brannan and John Center as sureties, both of which were approved.

On motion, the regular meetings of the board were fixed for the second Tuesday of each month, at 12 M. The president stated that he had a vacant room in Armory Hall building, which was at the service of the board, if it would answer their purpose, without cost to the society.

On motion, the generous offer of the president was accepted, and the thanks of the board were tendered to him for the same.

On motion, the secretary was authorized to procure the necessary furniture and fixtures required in the office.

The chair stated that he was authorized, by J. W. Tucker, Esq., to say that he would donate a seal to the society, and make the same whenever furnished with the design.

On motion, the thanks of the board was tendered to Mr. Tucker for his offer, and the executive committee were instructed to prepare a design for a seal and furnish the same to Mr. Tucker.

On motion, auditing committee, consisting of Messrs. Wadsworth, Green and Cumming, was appointed.

On motion, the secretary was authorized to deliver to any member of the board, certificates of membership in blank, to be sold to persons desirous of becoming members in the various counties. Wm. Green was appointed a committee of one to visit the Capital, and urge the passage of the law directing the appropriation to the state society to the district societies.

The executive committee was instructed to examine and report upon suitable location for fair ground at the next meeting. On motion, adjourned.

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**BREEDING "IN AND IN."**—We are asked to give our opinion of "in and in" breeding, by a correspondent from Cedar Creek Saw Mill, Double Springs, Calaveras county. We do not feel inclined to enter upon anything like an extended discussion of the subject, believing that we can add but little to the arguments for or against the practice, that would be new to our readers. The subject is still an open question with large numbers of intelligent stock-growers, and as undecided as ever. Our own opinion is, and our practice would be, just this: Had we a full blooded bull and a full blooded cow, of any of the choice breeds of cattle, no matter how closely they were allied by blood, if we wished to retain or perpetuate the breed in its purity, and could not procure as pure blood to breed from, from any other quarter, we should never hesitate to breed "in and in," as closely as circumstances might make it necessary; but it would not be from anything like preference to the practice. As a principle, we do not believe in it.

From the same correspondent comes the inquiry, "I would also like to know the best season for budding and grafting fruit trees."

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**BUDDING AND GRAFTING.**—Budding can only be easily performed when the bark of the tree to be budded peels or parts freely from the wood; because the process consists in introducing a bud between the bark and the wood; and this is usually done upon wood of the present year, though not necessarily so. Two or even three years old wood can be budded successfully, if the bark be soft and pliable, and peels freely. It is also the usual practice to use buds of the present year's growth; but this is not positively necessary; scions that have been cut for winter grafting, can be retarded in their growth, and the buds taken and inserted as *buds* instead of grafts; but not conveniently so, because they are destitute of the leaf stalk, so convenient in the handling of the bud in the process of preparing and inserting.

Budding, then, as usually practiced, consists in inserting *buds* of the present year's growth, upon *wood* of the present year. It is only necessary, then, to wait till the buds of the present season have become tolerably well developed or matured, and the tree to be budded peels freely. Cherries will bear budding much earlier than is necessary for the peach or apple, and yet, there is no particular objection to early budding of the peach; but cherries peel more easily, early in the season, say during the whole month of July, than they do later in the summer; whilst plums, apricots, peaches, and apples can be budded successfully almost as late as they continue to make growth, because their bark usually peels freely as long as they continue to make growth. It is generally expected

that buds inserted this season will remain dormant till the next spring: this is not necessarily the case always. Seedling peaches, upon a fertile soil, make usually an exceedingly luxuriant growth the first year; they often make two-thirds of that growth after they are budded, and three-fourths of the whole growth is often above the point of insertion of the bud, making it necessary to cut away nearly the whole of the first year's growth, or down to the bud, the following season. There is a method that, if properly, can be successfully practiced, that will, in a great degree, save this first season's growth. It consists in budding as early as the stock attains sufficient size—say that of an old fashioned clay pipe stem; now mark the conditions: After the bud is set, allow all to remain as usual for five or six days. In this time the bud will have become fairly attached to the stalk, if it ever does; now cut away the top of the tree, not down to the bud, but to within four, five or six inches of it, depending upon the strength of the tree—the weaker growing should be cut the closest. The horizontal limbs, if any, should be cut in to within an inch or two of the body, but not close.

The consequence of this treatment will be that all the buds—including the one inserted—for six or eight inches from the top downward, will start forth into leaf; now, as fast as they attain a length of leaf of say half or three-quarters of an inch, pinch them off, not all at once, but in the course of a week, until all are gone but the inserted one, which, by this time, will have made a growth of an inch or more. From this time all is safe; the denuded stump can now be cut down close to the inserted and growing bud, and the remainder of the season, if propitious, will make a handsome growth of the desired variety, instead of remaining dormant till the following spring. Some amateurs practice inserting the bud, and at once cutting the entire top back to it. This plan we have tried; we have often succeeded, but have sometimes failed, and in failing, lose the entire tree, which often happens in cutting down trees of any age close to the ground when in full leaf, in the heat of summer; but follow our plan as recommended above, and the practice is a safe one. Leaving the whole top on for a few days after the bud is inserted, continues the natural circulation of the sap in full, enabling the bud to set at once, if it ever does; whilst to cut away the whole top at the time of the insertion of the bud, causes an almost entire check to the circulation, whereby the chances of the bud setting is diminished. Leaving on a portion of the body of the tree, with a portion of its horizontal limbs and leaves till the buds begin to break, secures the tree against the danger of death, from being entirely denuded of all leaves, limbs and buds, except the one inserted. Other trees than peaches are often worked in the same manner, and, with proper care, successfully. Grafting is usually performed in the winter and early spring, and will be treated of in due time.

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**THE BORER—MULCHING—IRRIGATION.—EDITOR CULTURIST:—**I send you the subjoined notes for publication, if you shall deem them of sufficient interest to your readers. Having but recently become a resident of this state, it cannot be expected that I shall have become familiar with all matters relating to your horticulture; but having had some experience in other sections of the country, and feeling a lively interest in such pursuits, I shall esteem it a privilege to send you occasionally, notes and observations, which, if they do not benefit your readers, may tend to correct my own impressions, naturally springing from my new surroundings. [We shall be pleased to hear from T. A. S. monthly.—ED. CUL.]

*The Borer.* A correspondent from Iowa Hill says, in the CULTURIST for April, "I have been trying to find some preventive for borers, but thus far have not been successful." I have seen recommended, and have used, *boiling water* for the destruction of this destroyer of fruit trees—especially the peach. The tea kettle is a convenient vessel for the application. Take the water from the fire at boiling heat, and pour a pint or quart on the body of the tree about the base, extending upwards a foot or more from the crown of the roots, where the borer is generally found and his actions most injurious. The egg of the insect is sometimes found deposited higher up the body of the tree and at the axils of the limbs, but here they do but little harm. The *theory* is that the boiling fluid destroys both the egg and the larva—the borer. My experience has been, that I have not been much troubled with the borer since applying the simple remedy.



Two crops of borers are produced during the year; the first from eggs deposited the fall previous, in August or September, which remain in the tree during the winter, and hatch out and commence their depredations early in the spring, arriving at their perfect state, the moth or miller, in May or June (perhaps a little earlier in this latitude) and there deposit their eggs for a succession in August or September, and these last again for the spring following. Perhaps some of your readers may be apprehensive that, in using this remedy, they will destroy the tree as well as the borer. They need have no fears on this head; but to the cautious and timorous, I would recommend the experiment to be made on a few least valuable trees at first, and wait the result on them, which would be determined in a few days, as they are now in full leaf, and any serious injury would readily show itself in the foliage. The application should have been made earlier in the season, to check operations of the borer, and prevent the insect arriving at maturity; but may be resorted to now with good effect.

I doubt if the oil of soap is a sure preventive. It doubtless would be beneficial to the tree, and so would crude, or new made soft soap, diluted a little with ley, and rubbed on the body of the tree, from the branches to the roots, which I apprehend would be equally effective, readily procured and cheap.

*Mulching.*—In some of the earlier numbers of the CULTURIST, which accidentally came under my notice, I saw recommended several substances for *mulching*, and among them, in the mining districts, the *tailings* from the gold washings. A better material than tailings, or any other mentioned in the article, I think, is *chip litter*, which can be had in abundance in every mining neighborhood, and from almost every miner's cabin—the accumulation of years. This substance, too, is serviceable in more ways than one, being a non-conductor of heat, as well as a non-conductor of moisture; or rather is a non-conductor of moisture because a non-conductor of heat, and may be of use to *keep back* fruit trees in the spring, and avoid or lessen the hazard of injury from late spring frosts. It also affords a good mild manure, suited specifically to the requirements of the tree.

*Irrigation.*—Having been somewhat engaged in tree-pruning during the spring, and visited many young orchards, I am strongly of the opinion, that in many, if not in most cases coming under my observation, there has been a too free use of water—especially in fruit fields where vegetables and other crops are grown on the same ground, and both liberal manuring and irrigation are used to promote the growth of the latter. The injury resulting to the fruit tree is a too rapid, too long continued, and too strong growth of wood. The trees are too much drawn up in straight, perpendicular shoots, forming but an imperfect head, or succession of heads at wide distances apart, beyond the power of the pruning-knife to remedy, with wood less matured, fewer fruit buds for the coming year, and poorly flavored fruit for the present. Root pruning may lessen the evil in some degree; but this is mutilating at both extremities. The better method of obviating the difficulties named, would be, I apprehend, to “cut off the supplies,” instead of the roots—not so much as to stunt the tree, but enough to prevent their monstrous growth on the one hand, allowing sufficient to avoid a dwarfish habit on the other.

T. A. S.

SAN FRANCISCO MEDICAL PRESS. The second number of this valuable medical periodical has been placed upon our table. This number is entirely filled with original matter, including an abstract of the proceedings of the last session of the State Medical Society. The communicated articles—twelve in number—are from some of our ablest medical men in California, and cannot but be read with great interest, not only by medical men, but by the intelligent general reader. The PRESS is purely a California production. The editor designs to develop medical matters on this coast, instead of republishing stale articles from abroad. Thus far he has succeeded in no ordinary manner. The same enthusiasm and industry which has heretofore characterized Dr. Cooper as a practitioner of surgery, are apparent in his editing a medical journal, and will doubtless crown the present enterprise with abundant success. The PRESS bids fair to do the greatest possible good. Its efforts will doubtless restore harmony among medical men generally, promote the interest of medical societies throughout the state, and stimulate the members of the profession to greater exertion; and, above all, the editor's enlarged practical views of medical matters will, when fully known to the balance of the profession of the state, be not only highly advantageous to the members themselves, but the community in which they reside. The copy before us is the second edition of number two.

## METEOROLOGICAL TABLE,

For Sacramento, California; being an abstract of Observations made during the month ending March 30th, 1860; Lat. 38°, 34', 41", N.; Long. 121°, 27', 44", W. Height of the lower surface of the mercury, 41 feet above the sea at San Francisco. The observations are made three times a day conformably with the hours adopted by the Smithsonian Institution. The indications of the barometer are given corrected for capillary action, and reduced to the temperature of 32° Fahrenheit, but not corrected for its height above the sea level. The rainy days are included under the head of cloudy and foggy, and are also put separately to show the number of days on which rain fell during the month. The force of the wind is estimated and registered in figures from 0 calm to 10 a hurricane.

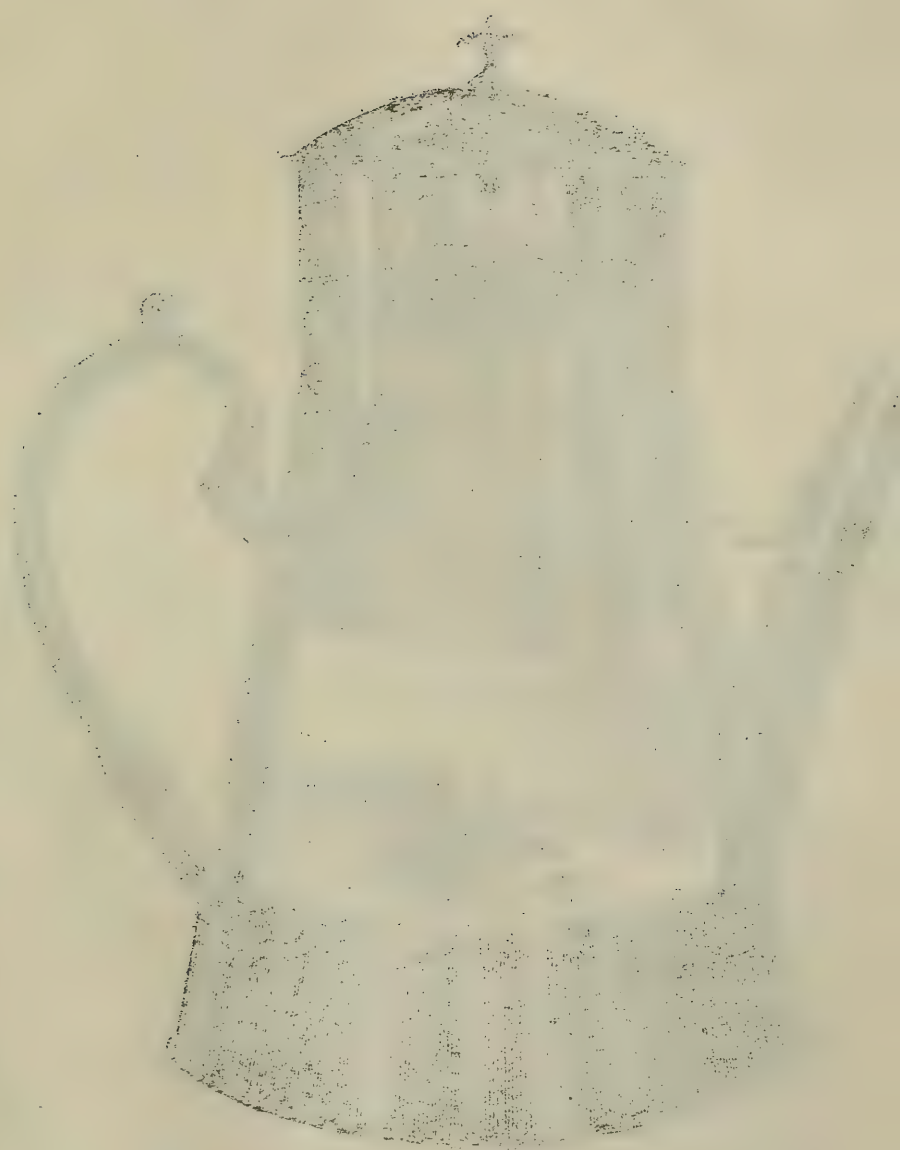
By THOS. M. LOGAN, M. D.

| MARCH, 1860.                        | 7h. A. M. | 2h. P. M. | 9h. P. M. | MONTH.         | AVERAGE OF EIGHT YRS. |
|-------------------------------------|-----------|-----------|-----------|----------------|-----------------------|
| Barometer, Maxima .....             | 30.326    | 30.334    | 30.323    | 30.334 inches. | + 0.026 inch.         |
| " Minima.....                       | 29.809    | 29.786    | 29.826    | 29.786 "       | + 0.036 "             |
| " Mean.....                         | 30.061    | 30.039    | 30.042    | 30.047 "       | - 0.017 "             |
| Thermometer, Maxima.....            | 57.00     | 64.00     | 59.00     | 64.00 deg.     | - 2.15 deg.           |
| " Minima.....                       | 39.00     | 51.00     | 47.00     | 39.00 "        | - 1.85 "              |
| " Mean.....                         | 48.78     | 57.32     | 53.81     | 53.30 "        | + 0.07 "              |
| Force of Vapor, Maxima.....         | .407      | .433      | .439      | .439 inches.   | + .009 inch.          |
| " Minima.....                       | .173      | .208      | .202      | .173 "         | + .036 "              |
| " Mean.....                         | .279      | .341      | .329      | .316 "         | + .025 "              |
| Relative Humidity, Maxima.....      | 93.00     | 87.00     | 88.00     | 93.00 per ct.  | + 0.01 p. ct.         |
| " Minima.....                       | 56.00     | 53.00     | 62.00     | 53.00 "        | + 15.54 "             |
| " Mean.....                         | 79.65     | 71.74     | 79.32     | 76.90 "        | + 3.46 "              |
| Number of Clear Days.....           | 4         | 11        | 9         | 8 days.        | - 2-3 days.           |
| Number of Cloudy and Foggy Days.    | 27        | 20        | 2         | 23 "           | + 2-3 "               |
| Number of Rainy Days.....           |           |           |           | 14 "           | + 3 "                 |
| Quantity of Clouds .....            | 4.9       | 4.3       | 4.2       | 4.5            | + 0.0                 |
| Quantity of Rain and Fog.....       |           |           |           | 5.110.....     | + 1.867 inch.         |
| 1st Days and 2d, Force of N. Wind.. | 12 2.0    | 8 2.3     | 8 2.0     | 9 1-3          | 2.1 + 2-3 - 0.3       |
| " " N. E. Wind.                     | 0 0.0     | 2 2.0     | 4 1.5     | 2              | 1.2 + 2-3 + 0.2       |
| " " E. Wind....                     | 3 1.3     | 1 2.0     | 0 0.0     | 1 1-3          | 1.1 - 1-3 + 0.0       |
| " " S. E. Wind..                    | 8 2.0     | 4 2.0     | 5 1.9     | 5 2-3          | 2.0 - 1-3 - 0.1       |
| " " S. Wind....                     | 5 2.0     | 9 3.2     | 6 2.2     | 6 2-3          | 2.5 + 2 + 0.3         |
| " " S. W. Wind.                     | 0 0.0     | 1 3.0     | 4 2.0     | 1 2-3          | 1.7 - 2-3 - 0.4       |
| " " W. Wind....                     | 2 2.0     | 4 2.5     | 3 0.8     | 3              | 1.8 + 1-3 - 0.4       |
| " " N. W. Wind.                     | 1 3.0     | 2 2.0     | 1 2.0     | 1 1-3          | 2.3 - 3-2 - 0.3       |

## Thermometrograph.

|                                         | DEG.   |                                                 | DEG.   |
|-----------------------------------------|--------|-------------------------------------------------|--------|
| Highest Reading by day on the 11.....   | .65 00 | Mean of all Highest Readings by day.....        | 58.46  |
| Lowest Reading by night on the 8th..... | .31 00 | Mean of all lowest readings by night.....       | 44.65  |
| Range of Temperature during month.....  | .31 00 | Mean daily range of Temperature during mo. .... | .13 81 |

REMARKS.—As is seen in the table above, we have received a considerable and opportune contribution towards the rain of the season, at a most critical agricultural period, swelling the aggregate amount to 16.670 inches. The greater portion of the rain of the month was precipitated during the last five days; falling slowly and gradually as it did, and unattended by those desiccating north winds, which we have experienced very seldom this season. It cannot fail to prove of lasting benefit to vegetation. During the whole month the weather has been marked by those sudden vicissitudes which characterize the breaking up of the winter season, and of which we may expect a continuance so long as the bulk of the snow remains on the mountains around us to chill the winds that reach us from over their icy crests. During a few occasional warm, sunshiny days, the effects of the melting of the snow were manifested in the river, which, also influenced by the fall of rain, attained an altitude of twelve feet above zero, on the 17th, and remained within a foot or two of this point until the last of the month, when it reached twelve feet, eight inches above low water mark. On the 13th, at about ten minutes past eleven o'clock A. M., during a still, cloudy condition of the atmosphere, such as has been generally observed to attend these commotions of nature, the shock of an earthquake was experienced; remarkable, inasmuch as it was not felt at San Francisco, and at no point of the coast range mountains. The direction of the impulse seemed to be from northeast to southwest, and the intensity of the force was sufficient to cause the ringing of bells, sensitively hung, like those on the hose-tenders of engines, and to produce a vibrating motion of bird cages, chandeliers and other pendant objects. The oscillation, which was horizontal, and lasted several seconds, was noticed also at Marysville, Forest Hill, Placer county, Iowa Hill, Nevada, Forest City, Sierra, Downieville, and most severely at Carson City, N. T. Although the time of its occurrence, in these different localities has been given in the public prints, still, the velocity of the earth-wave cannot be calculated, inasmuch as the timepieces are apparently too variant. The peculiar effect, frequently before noticed, of earthquakes upon the physical nature of man, was singularly exemplified in the present instance. Several persons experienced a sensation of more or less giddiness and sickness of the stomach, followed by headache, indicative of some influence striking immediately at the nervous system.







GOLDEN GATE COFFEE POT.

T H E

# CALIFORNIA CULTURIST.

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J U N E, 1860.

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## PREPARE FOR HARVEST.

**J**OYOUS, bounteous, glorious, yellow harvest is at hand, and the farmer's heart throbs with grateful emotions as he scans the ripening grain, and lists to its song of plenty evoked from the bearded husk as rustled by the gentle summer breeze, which basks in the general gladness, ever sporting onward in wavy, golden undulations. This period, just before the reaper has commenced its work, may be regarded as the most happy time in a farmer's life; because it is after a season of rest from the labors of the plow, and before the weary toil of garnering the crops has commenced, or he shall have reduced the result of his year's operations into a given number of bushels, or adjusted its proceeds in the financial trial balance of loss and gain. This, therefore, being the most proper time for him to philosophize, we desire to hold a consultation with him, in which we shall ask many questions about his business, and offer some suggestions for his consideration.

Having finished plowing, harrowing and sowing for the season, have you gathered up your plows, harrows and seed drills, and put them under cover, so that they will not be checked and warped by exposure to the effects of long summer sunshine? If you have not, you should do it now, for two reasons: they will last twice as long, and can be found when the season comes round for plowing again. It is well to sharpen your plows and harrows, and paint all the wood work of your tools, giving to the polished mould boards of the plows a coat of varnish you should cover the whole with. Now, if you are in the habit of doing this to preserve your plows and harrows, it is reasonable to infer that, last year after harvest, you pursued this same course with your reapers, rakes, scythes, forks, threshing machines and other implements used in the harvest; if so, the repairs they needed were made at a time when the blacksmith and wheelwright were not drove with work, and you had just harvested the money to lay down for the cost, instead of running into debt, to be paid

out of the uncertain next harvest, and you are ready at any moment to commence operations. You being a farmer of forecast, as evidenced by having everything in the condition described, will harness up the teams, and hitch on to one of T. Ogg Shaw's combined reapers and mowers some days before ready to reap grain, and mow or reap a few swaths to test the working condition of the machine. This may save you the vexation of delay, caused by going to the shop for repairs or alterations, at a time when a great many other farmers are also waiting for their turn; you, during this time, having also an extra gang of men to feed and pay, although idle for days, in consequence of some trifling defect in the reaper.

We said you would hitch on to one of T. Ogg Shaw's combined reapers and mowers, again taking it for granted that your sagacity, so far shown, has taught you that home consumption is your surest and most profitable market; and as his is purely a California establishment, building up and sustaining the artisan's household altar at your very door, you would give home manufacture the preference—quality of implements being equal. We have no inclination to describe what your neighbor, Mr. Slack, has been doing; we don't like to look at the mustard which he neglected to pull, now standing like a forest among his wheat, affording roosting place for flocks of blackbirds, on the alert to share the harvest; we have no fancy to witness the crash which takes place as he starts the reaper, rusty and weather-worn, which soon comes in contact with a plow or harrow left in the field where the headland was finished, but now buried from sight by the thick grain. We somehow distrust the soundness of the wood of the wheels of the threshing machine, which stood out in the field since last harvest, the lower parts buried in the ground all winter long. The creaking and snapping of the belts, wet by the winter rains, and suddenly dried a multitude of times, until they resemble strips of glue, make not the music we like. The screens to separate wheat from chaff, corroded with rust, perform foul service to the pearly grain. We don't like to follow him with the reaper or thresher to the repairing shop on the first or second day of operations, because we are aware that he has hired his men on the express conditions that they are to lose their time when waiting for repairs; because he well knows, by former experience, that there will be much loss of time in consequence of breakages, his tools having been exposed to the weather since last harvest. We don't like to go with him to the village shop or the one nearer, located at the cross roads, because there will be several farmer Slacks waiting like himself for repairs; and as there is sure to be a grog shop at the cross roads, the farmer Slacks and their men will doubtless be found in these dens of whisky drinking and card-playing. We have a natural repugnance to such places and practices; they have been the bane of California life. Many a young hope has been darkened forever in their poisoned atmosphere. Mature manhood and wrinkled age alike are victims; and if the agony and desolation which has been borne from California to the affections and homes of other lands could speak aloud, it would blend into one great wail—a curse upon all who give countenance to these detestable twin vices. Farmer Slack is a whole-souled, liberal fellow; he treats the crowd; the barkeeper will mark it down, because farmer Slack is flush after harvest. It is



observable though, that there are no church spires nor school houses in a neighborhood where the population are mostly of the name of Slack. To build school houses and churches it takes ready money, the absence of which is chronic with farmer Slack.

We will turn our back upon the Slack tribe, and finish our talk with Mr. Wiseman. We left him trying T. Ogg Shaw's combined mower and reaper; some of the cogs on a wheel are worn out or broken. Shaw has duplicates, or is casting every day in his foundry; so Wiseman does not have to wait on the pattern maker, but is ready the next morning to go to work. Wiseman has a vegetable garden and orchard; he has been building fences, hedges, ditches and making heaps of compost, besides plowing under a green crop for summer fallow, on a portion of his land, and by these operations is enabled to keep in regular employment, the year round, nearly hands enough to do his harvesting. He has no difficulty in getting extra good hands, as those who had previously worked for him are anxious to get back. Wiseman is a strict disciplinarian; he enforces a punctuality in everything; his personal supervision extends to the minutest details, yet he is not exacting. He never exhibits passion; his commands are given in a firm, but respectful manner. He studies to dignify and ameliorate labor, and has learned that if you would be respected by the laborer you must respect him. Mr. Wiseman is happily situated in all his domestic relations. Mrs. Wiseman seconds him in all of his undertakings; she reigns supreme in the household; comfort is everywhere observed to the exclusion of ornament; nothing is wasted, and it is wonderful how far she makes things go; yet abundance prevails, and her table has a profusion of luxuries which are home-made. She has a kind word for all; her heart is largely human. What wonder, then, that Wiseman prospers? Wiseman has examined his fields, and made note of those parts which will ripen first, and continue in rotation, and has calculated how long it will take to reap the grain. Wagons follow the reaper, taking the grain from the gravel and hauling it to the *corral*, where it is made into great symmetrical stacks. Wiseman does not commence threshing until he has finished reaping and stacking. He has a notion that the grain loses less when stacked immediately after being reaped, as it does not then shell, and the straw, being somewhat moist, he argues that it goes through a slight sweating process in the stack, which makes the straw tender, so as to become an article of food for his teams and stock. It also facilitates the shelling of the grain when he comes to thresh. Having finished reaping, he sets one hand to work with a horse rake to glean the scattering grain from the fields; while the balance, who had been reaping and stacking, now commence threshing. A point of his operations is now reached, with which Wiseman has a long time been somewhat dissatisfied. He would now like to be plowing under his stubble, as he has estimated the loss of fertility to his land, caused by the robbery of atomic matters, in the particles of grain scattered on the surface, which are picked up by crows, wild geese, black birds and insects. But his teams are required for the thresher; steam power is too dangerous and too costly, and he is not sufficiently acquainted with mechanism to construct a wind mill which shall have adaptation to the great motor which now is

idle, except to purify the respiration of his lungs. The straw is again stacked alongside of the *corral* as fast as it leaves the thresher. Now, Wiseman has learned that the straw, after being threshed, is difficult to handle, and as he hauled the grain directly to the *corral* from the reaper, he makes a saving of loading it on to the wagons once superfluously; and as soon as threshing is finished, the teams are available to haul the grain to the storehouse at the landing, where it can be shipped any time to market, which would be difficult if he stored on his premises, as the roads might be muddy, or his time engaged in putting in his succeeding crop. Thus, the grain has been hauled to market during the time that otherwise would have been occupied in stacking the straw, had it been threshed in different parts of the field, instead of being taken to the *corral* on first moving.

Farmer Wiseman, having stacked his straw and covered it so as to shed the rain, sits down under the fruit-swelling foliage of his vine and fig tree with his wife, to talk over the results of their year's industry. This has been pay-day, and all of their hands have been joining them in the dispatch of ripe, luscious fruits, and dainties prepared by the hand of Mrs. Wiseman herself. They have all left now; those sturdy, hard-palmed men, each with a smile of satisfaction; and Wiseman and his better half sit down by the table in the open air, the little Wisemans have gone to bed, and the shadowy wings of gorgeous, mellow starlight are falling fast. Wiseman is musing to himself, and making calculations of the number of cattle he will be able to feed with his straw, during that part of the winter when stock is in a starving condition, owing to the scarcity of natural forage. He has satisfied himself that his straw is of sufficient value for stock-feeding to make that part of his receipts alone a compensating year's business. Not only that, but by feeding it out in the *corral*, he is making a large supply of manure to keep up the fertility of his fields. He is something of a fancy stock man, and has some pure Durhams and Devons, and realizes the fact that these cattle must, by necessity deteriorate, unless efforts are made to improve our grasses for summer pasture, and to provide a supply of food for their winter use. His musings are brought to a close by Mrs. Wiseman, who points out to him a multitude of great bonfires, away over in the neighborhood of the Slacks. The dark columns of smoke ascending upwards, set off grandly the lurid glow of the flames beneath. Wiseman looks at the sublime spectacle, with an appearance of regret on his thoughtful countenance, and says to his wife in a low tone, "It's too bad; the Slacks are burning their straw." Thus, "riches take to themselves wings."

F.



THEY are said to be experimenting on grapes with great success in northern Louisiana, by grafting the best varieties from France upon the wild grape vines which grow luxuriantly in that region, and some grapes have been produced that cannot be excelled in Europe.

### PLOWING BY STEAM.

**T**HERE seems to be a mania just now pervading the minds of mechanics and agriculturists of both England and America, on the subject of applying steam to the different processes of farm culture and management, and very great success has attended its application to a variety of purposes. Portable steam engines for threshing grain, grinding and cutting food for animals, sawing wood, pumping, ditching, indeed almost anything for which power is required, except in the one matter of plowing. In this we have an operation to perform, that lies at the very foundation of our agricultural prosperity, which seems to have defied every effort of our mechanics, to successfully apply steam power to its accomplishment, or at least, until quite recently; and, even now, it is highly problematical as to whether there has yet been an application of steam to the plow that can be said to be so clearly a success as to be of general availability, or applicability to the purpose.

Ponderous machines—a kind of hugh locomotive, with plows attached, have been put to work and performed operations that were called plowings; but these machines require from forty to sixty feet in length, and from six to twelve in width of ground on which to stand when still, and a small farm is required to turn one round on. Or, as in the case of the English machine, stationary engines, and yet movable from time to time, on the sides of the field to be plowed, are made to drag a gang of plows by means of a rope that shall reach across the entire width of the field to be plowed. All these appliances are too cumbersome and too costly to become general—besides they do not as yet perform the work satisfactorily.

What the masses of our agriculturists want, is a machine that is within the reach of moderate capital, and a machine, too, that an ordinary mechanic or farm hand can manage. It is the enormous expense attendant on keeping steam machinery in motion, including fuel, wear and tear, and its proper engineering that will for a long time prevent the farmer of small means from profiting by steam plowing, so long as the process is performed by the present implement in use for the purpose—the common plow. Some other implement must be devised that will not require the immense amount of power, necessary to drag the best of our plows through tough swards or tenacious, heavy clays. The best draft engines yet applied to gangs of plows, have been but little more than sufficient to furnish a power equal to the amount required to propel itself forward upon unfavorable ground, and drag behind some eight or ten plows. What we want now is, some implement that will pulverize the soil equal to the plow, and yet do its work with half the present power required to “speed the plow” in its present form. Then, and not till then, can we hope to see steam, as a motive power, successfully applied to plowing, except upon a scale so extensive, and attended with so much cost, as to be entirely beyond the means of the great body of the farmers of any country. We intend personally to experiment upon an implement for pulverizing the soil, that shall not require the power usually expended in plowing, and expect to have it on exhibition and trial at the Alameda county fair, fifth of June next.



### THE DAIRY.

I NEED not say he who has a good dairy must have good cows. And what breed of cattle will give him the best cows? I answer, much will depend upon his location and the particular disposition he intends to make of the milk obtained from them. If he sells his milk, cows that will give a large quantity without so much regard to quality—except to have it healthy and as natural as possible, for I shall only refer to the production of an honest and healthy article. If he converts his milk into butter, then those that give most butter of good quality. In both cases, the amount of food consumed, and the value of the animal for the butcher after her milking qualities have become impaired by age or high feeding, to be taken into consideration. Many prefer to buy their cows from drovers, but the most profitable dairies I know, near large cities, are those that raise their own cows from improved breeds.

Undoubtedly the Ayrshires will give more large milkers of more than average quality than any other breed that will be worth as much for the butcher after they have ceased to be profitable for the dairy. We often find very superior milkers among the Durhams or short-horns; perhaps some of the best milkers I have ever seen have been of this breed or their crosses, but they are not uniformly good, and latterly they have been bred so purely for beef that good milkers are the exceptions and not the rule. What is true of the Durhams is much so of the Devons; they, with the exception of a few herds, have been bred to develop beef-making rather than to encourage deep milking qualities, and in these herds there are hardly to be found any cows that come up to the highest standard of excellence as milkers, nor as herds can they successfully compete with the best herds of Ayrshires. Some of the best milking Durhams and Devons I ever saw gave a light colored butter, though the quantity was not small. But for the production of butter of the highest flavor and richest color, the Alderney or Jersey cow has no rival, and if the location of the dairyman is such that he can avail himself of a frequent market for print butter, there is none that will return so much profit on the outlay for herself and the food she consumes; she rarely fails to make good returns for all the extra care and feed she requires above the most hardy breeds. I know of cows of this breed that are producing over one hundred and fifty dollars worth of butter per year, and that on not the highest feeding, as breeding is the first object. The milk is usually not a large yield per day, but extending through the greater portion of the year, and so rich as to require but from six to ten quarts to make a pound of butter, and sometimes even less than the smallest quantity. Such cows as these seldom have any arrearages to foot up their worth for the butcher, need be taken into account when they fail as milkers, for so long as there is a possibility that they will perpetuate their kind they must be worth more for this than for beef. The wealthy consumers in the larger cities are always willing to pay very high prices for Alderney butter, and are rarely satisfied with any other after they have become accustomed to its superior flavor; it usually sells for at least twice the price of the firkin butter. Very few of

these cows have been imported that failed to more than pay for themselves, with the cost of their keeping and attendance, in a very few years after their importation, in milk, cream and butter, besides their returns in calves.

The Ayrshire is a large milker and a hardy cow—seldom dainty, usually eating with a good appetite what most others would reject—and while she will *live* on a scantier allowance than most others, she will yield rich returns for liberal feeding—and on that feeding will last longer than most other breeds, being less disposed to take on flesh when giving milk, than either Durhams, Devons or Herefords; and, although she must yield the highest rank to them for beef, she will yet be very valuable to fit for the butcher when her useful milking days are over, for none will fat more rapidly than she when dry. If there is any breed that *can* be profitable on scanty feeding and poor pasture, it is the Ayrshire. She is also most pleasing to the eye of the milking breeds, her form being round, more compact, and her color more uniformly pleasing than others. But where a rich return in butter is the chief object, and the dairyman is willing to care for and feed liberally, the Jersey is *the* cow—she is a very industrious breeder and a constant milker, and therefore needs care and nourishing food, for which she will repay. While she has not generally the fine outline and compact form of the Ayrshire, she has her finer points, as none can compare eyes with her except at a disadvantage, nor rival her deer-like head and neck. The latter importations are usually the best. The peculiar points by which her purity should be judged, are not so well agreed upon in this country as those of other breeds, but the weight is in favor of the fawn, dun, or French gray color, sometimes intermingled with white, but the latter should not predominate; the muzzle should have a rim of white or mealy hair, the nose and tongue black. In my next, I propose to consider crossing to obtain cows for the dairy.—*American Stock Journal*.

#### PREMATURE IRRIGATION.

**A**S the season has arrived when a great many people consider it necessary to commence irrigating their orchards, vineyards and gardens, in order to promote, as they suppose, the growth of the vines, plants and trees, and secure the maturity of the fruit, inquiry may be made as to whether such practice is really advantageous, thus early in the season.

As a general thing, the soil of California is deep, porous, rapidly absorbing the winter rains, so that they do not flow off in streams, and prone to retain this moisture to a late period of the season. This soil, too, is rich in material to nourish vegetable life, whether taken from the substrata of the valleys and great plains, the declivities of the foot-hills, the mountain's high summit, or the dark depths of the miner's drift, hundreds of feet from the sun ray, beneath the former moulted stream of the now lava crust. Wherever this earth is thrown up and exposed to atmospheric influence, it becomes, in a short time, the nourishing bed of healthy vegetation. To this natural fertility of the soil, and the long drought of summer, may be attributed

the tendency of all species of plants to send their roots a great way down in search of moisture. Trees grown in this kind of soil and climate without irrigation, may be said to possess two kind of roots, widely differing in their character and the influence they exert over the habit of the tree. The first, or upper set of roots, are fibrous and do not range a great way from the trunk. As the sun begins to warm the ground in the spring, these roots, being near the surface, become stimulated, and are the main reliance of the plant while in the critical process of swelling the dormant buds into leaf and blossom, affording to the roots those composite ingredients, engendered by atmospheric influences, producing the chemical action in the earth—that great laboratory of nature, wherefrom are sent up secretions to fertilize the anthers so that the blossom may “bring forth fruit after its kind.”

It will be observed that only a small proportion of the blossoms which appear, ever set for fruit, and, in many instances, the horticulturist has the mortification to find that trees which were a sheet of blossoms, do not mature a solitary specimen; and in his first moment of disappointment, he is apt to attribute the failure to frost or a blasting wind, when, in reality, it is caused by a derangement in the habit of the tree, originated, perhaps, by previous bad treatment; for, be it ever remembered, that a disregard of the laws of vegetable physiology brings as surely this train of disaster, as a contempt for the rigid admonitions entailed upon animal existence. Take the blossoms from a tree which has a sickly habit, and subject them to microscopic inspection, and there will be observed a marked difference between their appearance and those taken from one of a vigorous healthy character. In the case of the latter, the flower leaves are more fully expanded, and, traversed by arteries which show a greater quantity of coloring matter, and the anthers are loaded with pollen, which appears like parasitic globules, and is easily detached by the wind or the slightest touch, thus fertilizing the blossom; while those from a vitiated plant are paler, have a tendency to curl downwards on first opening, not taking the cup form of the more healthy, which is a curious provision of nature to catch the falling pollen so as to fertilize the stamens. The anthers of the sickly tree have but little pollen, and that of a flatulent, watery consistence, not easily detached, and perhaps barren of the elements of reproduction.

Now, to remedy these defects, we must look for the causes which produce them; and may not one of these causes be attributed, in many instances, to the drowning effects of early irrigation, at a time when the ground is cold, as well as the water with which it is flooded? Trees and plants which thus receive early, copious irrigation, change their previous dark, green foliage to a pale, yellowish cast, which, in many instances, will be retained through the season. Premature irrigation not only disarranges the natural action of the surface roots, as before stated, but chokes up the pores of the ground so that the deep or tap-roots are not excited by the descending warmth, which, as it extracts the surface moisture, begins to demand large supplies from the reservoirs below. Thus the main feeders, with their reserved supplies, are kept back until late in the season, and contribute then only to a prodigious growth of watery wood, destitute of fruit buds, and unripened at the coming of winter. It



must be borne in mind that our soil, being deep, becomes filled with moisture from the rains of winter, and in the absence of this, it should be supplied by copious winter irrigation, in consequence of which it will be longer in becoming warm, and as a deduction, will not so soon suffer for the want of rain, as the lands of the Atlantic states and Europe.

In the latter countries, where the soil is shallow and only fertile on the surface, the roots permeate near the surface, and would exhaust the moisture to such an extent that the tree would suffer, were it not for the constant natural irrigation afforded by showers of rain. In California, the reverse condition is the rule, and horticultural practices must conform thereto. Late irrigation may be considered, also, a damage rather than benefit, as it not only forces the fruit buds into wood branches late in the fall, but deprives the tree of a large part of its natural season of rest, which, in California, is the latter part of fall and fore part of winter.

The most favorable time to irrigate orchards and vineyards, if they need it at all, and it is best to try thorough pulverizing cultivation of the land before admitting the necessity of irrigation, is after the ground and water have become warm and the fruit considerably developed; then let it be copious and thorough, being careful not to let it come too near the trunk of the tree. After being thoroughly wet, and worked without becoming lumpy, the ground should be cultivated and worked over with a rake, wherever the water spread—otherwise it would soon bake and become dryer and in a worse condition than before the water was put on.

F.

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### THE HORSES WE WANT.

**I** HAVE read with much interest the article from Mr. Lieber, in the last (September) number; and his suggestions of adapting the plants we cultivate to the soil and climate, is the true and only way to success.

But I must beg leave, most deferentially, to differ with him in his views as regards our horses. I never have and never can be made to believe that our horses have become light and weak from being so much intermixed with the blood of the thorough-bred, for my own experience of the last twenty years in using horses, and in the last fifteen in breeding horses, is just the reverse.

I have found, under the saddle, in light drift, in the plow, and in the wagon, that blood will tell; but, mark me, I do not mean to say that all and every thorough-bred will excel in each of these places, merely because they are thorough-bred; but they must have the form for each and every place.

I cannot agree with him about the German horses being an improvement to our road or plantation stock, for, to import the stallions to put to our mares will never do, it being an established fact, that the best of colts are got where the stallion is rather under the size of the mares. And, even if they would cross, we want no horses over fifteen and a half hands high for common purposes, if they are the right make and form.

I contend that we have the material here at home for breeding as good horses as

we need, if we would only set about breeding and raising colts in a rational manner. If a man wishes to raise a colt, he picks up an old broken-down mare, and puts her to the first stallion that chance throws in his way—perhaps an unmatured or three-year old colt. The mare is half starved, and when she foals she and her foal have to make a living in a broom-straw old field, or pine-barren. There are certain established rules in breeding horses, departure from which always results in failure; and even sometimes when they are most strictly followed, disappointment will come. Great judgment is necessary in choosing a brood-mare, and just as much in choosing a proper stallion to breed her to, after she is procured. But most persons think and say—that is a finely bred horse, and must breed good colts, without ever looking over his points; and many who are desirous of breeding a race-horse will put a fine mare to a very ordinary looking and badly shaped horse, merely because he was got by such a horse. From such breeding weeds must come, and then the fault is laid upon the race-horse—too much race blood. Give me always a thorough-bred stallion, even to raise plantation horses. But he must be of the right form; and the finest race-horses are not those who will get the best half-bred horses for all work.—*Farmer and Gardener.*

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BEES.—We spent an hour among the bees at the great apiary of the Harbisons, near Sacramento, in the early part of last month, and were highly delighted with the animation presented at his establishment. Myriads of buisy workers winged their way from their insect metropolis, like the merchants' fleets over great seas, to gather luxurious sweets and life-sustaining aliments from the opening buds and blooming flowers that spread out on all sides in nature's gaudy profusion. So much has been written in description of the apiary of the Messrs. Harbisons, that any attempt on our part would be superfluous; suffice to state, that their success so far, this season, gives the most gratifying evidence that bee-culture in California is destined to become a large branch of our industrial pursuits. The Harbisons have reduced their business to a science, not only in the management of the bees, but in the economy of construction of the tenements to be occupied by the young colonists; they having erected on the spot a factory in which is used a variety of labor-saving machines, driven by one of Dickerson's self-regulating wind wheels, which, at the time we were there, was running with the rapidity and force of a four horse power steam engine.

Messrs. Harbison are devoting about half of their swarms this season to the production of honey, and have planted large plats of buckwheat and other honey-producing crops, which will mature after the wild flowers on the prairies have ceased to blossom. While looking around among their bees, we noticed a tank where the bees drank water, the surface of which was covered with fine slats, upon which were vast numbers of bees drinking. Most of them seemed to prefer the water which had become warmed by capillary attraction to the upper and exposed parts of the slats. It is to be hoped that the increase of bees in California will be so great this season, that apiaries can afford to reduce the price so that every home in California may be enabled to enjoy in profusion, at least one of the sweets of life—honey. F.

## A SURE REMEDY FOR LICE ON ANIMALS.

IT is really amusing, but not very instructive, to read the ideas of different men with regard to the manner of treating lice. One will recommend one nostrum, and another something else equally inefficient.

Why do lice flourish best, and increase much more rapidly, on very poor, emaciated animals, than they will on fat animals? Because the surface of the skin and hair of fat animals is somewhat oily, while the skin and hair of very poor animals is quite free from oil. Well, what of that? Why nothing, only no lice can ever propagate their species among oily hair; and whether they have any brains or not, they will never deposit their nits among oily hair. If the nits, after they have been deposited, or stuck to the hair, should be oiled, they will never hatch; and the lice seem to know that fact, and therefore they do not find a congenial locality in the hair of an animal which perspires very much. Consequently if lice are formed on a *fat* animal, they will always be more numerous near the end of his tail than on any part of his body. Lice are very much like sheep in one respect; they like a warm and dry place.

Let a few nits be placed in a warm place for a few days, and they will hatch; but let them be *oiled*, and it will be impossible to hatch them. So with the eggs of birds and domestic fowls; give them a good coat of paint or grease, and they will never hatch.

The bees, which are a great annoyance to horses in the summer, which fasten their eggs to the hair of horses, seem to understand this principle much better than most people do, and therefore they deposit most of their eggs on the hair which will be least liable to be moistened with sweat. For this reason, we always see many more *bot eggs* on the legs, below the knees of horses, than on any other part of them. If such eggs should be greased, or moistened with sweat a few times, they will never hatch. There are several very good remedies for lice on animals; but, among them all, perhaps, *oil* is the most efficacious and harmless. None but sweet oil, or the best kind of lamp oil, or winter strained machine oil, should be used for such a purpose. If linseed oil, or some other kinds of oil be used, it is liable to dry, and the hair of the animals will all stick together in dry, hard bunches. Pour it on their backs, and on their necks and tails, and rub it in thoroughly; and if the lice take up their quarters on the dewlap, give *it* a good oiling, and they will soon bid adieu to such oleaginous climes. Oil should be applied when the weather is *warm*, rather than when it is very cold; because in very cold weather, lice keep very quiet, and do not deposit many eggs. Let it be kept in mind that they never deposit their eggs on oily hair.

In the spring of 1859 we were raising a lot of turkeys, which were about as large as quails, when they began to droop, and appeared very lifeless. Upon examination they were all found to be as lousy as an Egyptian. Every one of them was caught, and sweet oil was rubbed on their heads and *poured* on them, under the wings—giving them a good sopping—and in three days not a louse could be found, and the turkeys soon began to flap their wings and move about with agility.



Mercurial ointment, or "*unguentum*," which is made of mercury, mingled with lard, is often recommended for lice. But it is a very dangerous remedy, and is no more efficacious than oil. I applied mercurial ointment once to my calves, which were lousy, and it made them so sick that I feared, for some time, that I should lose them. Such a remedy never should be used, when there are enough besides, of a milder character.

A decoction of tobacco is frequently recommended for destroying lice; but oil is cheaper and more efficacious, and will not make animals sick; but tobacco, when applied very bountifully, will often make them sick.

Fowls roll in the sand in order to mingle it with their feathers, which will *scratch* the lice to death; and cattle frequently throw dirt on their backs, which destroys the lice *mechanically*, just as scores of people are smashed up among the rubbish of a huge building when it falls. But it is very difficult to make sand or ashes remain among the hair or the dewlaps of animals, or on their sides; therefore, oil seems to be preferable to almost any other remedy.

Fat cattle will sometimes be covered with lice. I once owned a yoke of very fat oxen, which were the lousiest beings that I ever heard of; but a good sopping of oil soon dispersed them. Keeping animals in a thriving condition is usually a good preventive; but it will fail sometimes as a remedy.—*Country Gentleman*.

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### BUTTER AND CHEESE-MAKING.

**F**EW persons ever stop to calculate how largely butter enters into the cost of living in California; and it is surprising that an interest which commands an expenditure of millions of dollars annually, should have engaged so little attention among our people who are so largely engaged in stock-growing. Heretofore, when beef was the chief article of diet, it was regarded as of first importance to let the calves have all of the milk so as to grow them to beef-answering proportions as soon as possible. But with the increase of pork, mutton, fowls, vegetables and fruits, there has come a great diminution in the quality of beef consumed *pro rata* among our population. Now, this increase of the last named articles of food, particularly of fruits, is of such magnitude, and the prices range so low, that the people of the most limited means are enabled to use it in profusion, not only for the dessert, but it enters largely into the culinary operations of the kitchen; and it is a hopeful indication that it is so—indicating as it does, not only a more refined epicurean taste, but giving evidence that, as a people, we are paying more attention to hygienic laws. The great bulk of emigration to California came from counties of cold latitudes, where the more gross animal food is regarded as essential to human vitality, and thus the appetite for animal food, fixed by a life-time habit, met with little deprivation on change of locality, as beef was found in abundance at the new domicile, while the salted provisions of the north were the only accompanist. What wonder, then, that a people with whom

such food had been habitual, should continue its indulgence—both the result of habit and necessity. The effects of the almost exclusive use of animal food in warm climates is seen in the virulent excitable temperament of the people, as it induces a febrile disposition, and a craving thirst for intoxicating beverages. No one long conversant with California life, can fail to have observed these indications; and in comparing the commencement and close of the last decade, he will be amazed at the change in the social habits of our people. With the advent of women and children amongst us, sprang up rural homes, adorned with the fruits of all climes. Horticulture, which at first was regarded as an experiment, has made such gigantic strides that, young as the state is, she can boast of some of the largest vineyards and orchards in the world, belonging to any one proprietor. And as abundant and cheap as fruits have been, we have every reason to hope that they will become more so, from the very greatly increased attention given to pomology. Our people are fast learning that ripe, luscious fruits are far more wholesome in our dry, warm climate, than an excess of animal food; therefore, the substitution of vegetables and fruits as an article of common diet, has, to a great extent, limited the demand for animal flesh, and its effect upon the beef market is already apparent.

With these facts before them, and a further knowledge that California is rapidly becoming a great wine-producing land, and all history teaching that, where wines are pure and cheap, the people are inclined to frugality in their food, preferring fruits and vegetables instead of meats, what course should our stock-growers pursue in order to meet the change in the habits of our people, without serious consequences to the grazing interests? To us, the suggestion at once arises: Would it not be well to encourage those breeds of cattle more distinguished for milking qualities than beef-making? We shall start upon the hypothesis that California has better natural grazing facilities than any other country in the world, except perhaps, South-Western Texas. Now, the article of butter and cheese, as indicated by the "prices current" list, will show a higher average price in our market for the past ten years—quality considered—than in any other market in the world. Compare this fact with the no less striking one that, twelve years since, cattle-growing was the paramount, predominant, prevailing occupation of California, comprising its almost entire source of domestic industry and commercial resource, and what is the conclusion? Why, that our stock-raisers have been following the beaten track of the old rancheros, by continuing to breed cattle, in the main unsuited for dairy purposes; and that, by their inattention to butter and cheese producing, they have a long time debarred themselves of a cash-paying market for an article which our state imports to the value of millions, and which she should long since have been an exporter of to the many markets of the Pacific within her reach. There is something radically wrong among our stock-growers, or they would ere this have shut out importations of butter and cheese, and have produced a supply of these indispensable articles of every-day consumption, so that we would not be subjected to such extraordinary fluctuations in the price. At this present writing (7th of May) butter and cheese range from twelve to twenty-five cents per pound; while we may anticipate with certainty, that it will rise to fifty or

seventy-five cents for choice butter before next February. This unreasonable fluctuation cannot be attributed to extraordinary consumption or demand; because the amount daily consumed varies little in the year. It may be traced to the ability of supply and not demand. This, then, places the control of the whole matter entirely within the reach of the dairyman. By relying only upon the natural forage of his range, it may be said that the dairyman's cows either have a feast or famine. As, during the spring and fore part of summer, they are up to their eyes in the rich clovers and nutritious grasses of these luxurious seasons, to be succeeded by months of parched herbage, and the "winter of discontent," when the starved bovine does bravely if she survives the drenching storms, without giving to her improvident owner any of the lacteal fluids.

The season when the green herbage is in good condition for the dairy is of about the same length in California as in the northern Atlantic states—being here from February to July, and there from May to October, with this difference in our favor: that with artificial, fall irrigation, we can produce grass crops which will get sufficient strength to survive the early frosts, and by the cultivation of root crops, we may keep our dairy in a butter-producing condition at a trifling expense; and, by having a part of the cows drop their calves in the early part of the fall, good fresh, yellow butter can be sent to market the year round. So much has been written and said about the best mode of making butter and cheese, that our space, at this time, forbids details. We shall only offer some prerequisites to a good dairy. The first is good land, which should be a rolling, hilly country, with an abundance of shade trees and plenty of clear, sweet water. Animals are averse to great plains; they don't like the hurricanes which sweep over them with the storms of winter; while the heat and dust of summer fills up the pores of their skin, and makes them feverish and mangy. The next thing wanted is good cows; discard all that have a mixture of the Spanish breeds; you may as well choose oxen. A white nose and yellow skin are the two best points for a butter-producing cow, and it is a curious fact that such will be found to have the most docile and amiable disposition, equally important considerations in the selections of cows. Short legs and large abdomen are also good points of a great milcher. If you have a large number of cows to milk and are short-handed, your cows should be divided and kept in separate inclosures, so that a given number can be driven into the yard and milked at time—each cow being distinguished by a number and milked in rotation, so that the time of milking shall not vary. When driving them up to be milked, never allow a cow to be urged faster than a walk. Loud talking or the presence of dogs should be avoided about the milk yard, as anything that attracts the attention, or is calculated to excite a cow while being milked, is apt to make her hold up her milk, so that a portion of it is left in the udder, where it creates a fever before the next milking, thereby vitiating the quality of the butter. No bull should be allowed to run with a herd of cows kept for dairy purposes; and as soon as it is discovered that a cow is in heat, she should be removed from the herd; and if, on calculation, the time will be right when you desire the cow to come in fresh, then she should be sent to pay her respects to "*Sig. Fuoro.*" As to the



best article of food to give dairy cows, there is a diversity of opinion, the merits of which we have not space at this time to discuss. We may, however, state our belief that the wild oat of California, with which a great part of our grazing fields is covered, is not, when it becomes the sole food of the cow, a good substance for the production of milk. We merely advance this as an opinion, formed without sufficient data to fully satisfy ourself of the fact, and should feel under great obligations if dairymen, located in different parts of the state, would give us the result of their observations, as upon the matter of forage for milking cows, will be demonstrated the practices which shall make us a great dairy-producing people. It is upon the problem of quantity and quality that a solution will be found as to how long we shall be tributary to the dairymen of the Atlantic states for the larger bulk of our supplies of butter. As stated in the beginning of this article, the glut in our markets at this time, by an overproduction of butter for present wants, establishes the conclusion that there is no difficulty in the way of quantity of superior quality. Hence, the inquiry follows, Are we not deficient in a method of packing and preserving our present surplus so that it may be distributed through those seasons when there is a short supply? As an answer to this involves an investigation into the *modus operandi* of the dairy-room, we must defer the subject until another number. F.

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#### CURLED LEAF.

MUCH has been written and said about the curl in the peach, yet the cause has not been definitely ascertained, nor any certain remedy discovered. It seems to affect some kinds more than others, among which may be enumerated seedling, as distinguished from established and defined varieties—particularly those raised from Chile seed. It has been hoped that this disease, so fatal to the young fruit in its first stages after blossoming, would not prove formidable in the clear, dry atmosphere of the Pacific slope; but such hope can hardly longer be indulged in, as the disease seems to be spreading throughout the interior, and with increased virulence. Not only has it become a source of alarm to peach and nectarine-growers, but its fungi has become contagious upon the pear, acting upon the latter with more virulence, as it not only spreads over the leaf, but even upon the fruit while in blossom, and until it may be said to have set. Its first appearance is denoted on the half expanded leaf, by a great number of infinitesimal specks of a dark, chocolate and crimson color, which rapidly expand with the leaf, until they run into large blotches. This disease of the pear is entirely different from the fire blight which appears later in the season, and its disappearance is sometimes with that of the curl of the peach. Thus far, it is confined mainly to two varieties—the Dearborn's seedling, and that other, the most hardy of all, Louis Bonne de Jersey. The writer has been practicing a series of experiments for the past few years, in the time and mode of pruning the peach so as to test the effects of the different plans, in hopes of obtaining results which would indicate a mode to prevent the curled leaf. Thus far, the results of these experiments

are, that peach trees which have been pruned in the spring, after the fruit had set, and those pruned in midsummer, while the tree was in growing condition, have suffered less from the curl. Those most subject to the fungus were heavily pruned in midwinter, when the sap was dormant. Hence, it would seem that the curl of the leaf is caused by an excess of sap from the roots, there not being a sufficiency of foliage to absorb it; in other words, the equilibrium of root and branch having been destroyed by an under amputation of the branch, the pressure of sap collapses the sap vessels of the albuminous shoots which have not been hardened, and they, like the leaves, become covered with a fungus exudation, in consequence of the air, at this early season of spring, being subject to sudden changes from cold to heat, but always running humid, so that atmospheric respiration does not aid or promote healthy functions.

F.

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THYME AS FOOD FOR BEES.—On a recent visit to the nursery of R. W. Washburn, Esq., at Shell Mound, Alameda county, our attention was attracted to a bed of thyme, on which countless numbers of bees were at work; and, on inquiry of Mr. Patterson, the superintendent of the grounds, we were informed that he had noticed for the past two years, that the bees worked on this bed of thyme, to the exclusion of all other flowers—and the grounds of this establishment are adorned with all kinds of rare plants and flowers. We examined the gorgeous bloom of a great variety of plants in the vicinity of this bed of thyme, and can confirm the observation of Mr. Patterson, with respect to the fondness of the bee for the thyme, as against other and more pretending blossoms. We examined carefully thousands of bees as they were working on the blossoms of this bed of thyme, and became satisfied that they extracted from it nothing but honey—there being no signs of bee bread or wax in their gleanings. Thyme is an herbaceous plant, easily propagated from seed, layers, or a subdivision of roots, and on moist ground will spread so as to take entire possession. The blossom is small and the cups shallow, so that the bee has no difficulty in penetrating to the secretions of honey in its base. The honey doubtless will have a pleasant, aromatic flavor, as the plant itself has long been regarded as of great value for culinary use in seasoning food. May not our apiarists find in this plant an invaluable acquisition to their growing interest. It is easily propagated, is perennial and continues in bloom nearly the entire year, and seems to be rich in honey, a deficiency found in a large number of California flowers. What apiarian will have the first large field of thyme for bee pasture?

F.

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WHITEWASH.—Whitewash of a superior quality, is made by mixing one bushel of lime, (slacked in hot water) one quart of salt, four of sugar, two ounces isinglass, and two ounces saltpetre. Each ingredient dissolved in hot water, and the whole mixed while hot. This whitewash will neither wash nor rub off, and will last for years.

## PEACH BRANDY.

EDITOR CULTURIST.—In view of the great abundance of pomological products that, in all parts of the state, are now rapidly advancing in growth and approaching maturity, a serious question is presented as to the actual disposition to be made of the large surplus that must invariably be produced, beyond the quantity that can possibly be consumed in a fresh and ripe state, at prices that will pay the expense of gathering and marketing. For the last three years, large and important sections of the state, devoted to fruit-growing extensively, have been more than doubly decimated of their anticipated yield of bushels of fruits by untimely frosts. The peach, particularly, has been a regular sufferer from these unwelcome visitations; and yet, with each succeeding year, the peach crop at the season of ripening has been profuse and even abundant, to that degree that barely a paying margin was left to the producer after marketing his crop.

This year the peach crop promises to be immense—altogether beyond any season that has preceded it—and to suppose that it can all find a market at paying prices, at the season of ripening, is to suppose, or hope against even a probability. What, then, is to be done with the surplus? Can our peaches be converted into spirits or brandy, or can they be dried and enter the markets in competition with the imported article at prices remunerative to the producer? These are questions that interest many at this moment, and no one more than myself. It occurs to me that the expense of drying peaches must depend much upon the prices of labor necessary in preparing the fruit for drying, and that possibly, on this account, it may be found more profitable to convert them into brandy; but how is this to be done? I do not understand the *modus operandi* of preparing the fruit juices for the distillery. Can you, Mr. Editor, enlighten your readers on this subject, and very greatly oblige,

ONE OF THEM.

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DRYING PEACHES—PEACH BRANDY.—Our correspondent, ONE OF THEM, is not the only peach-grower who is this year revolving in his mind, as to how he can best dispose of his advancing peach crop. But a few days since, a large producer of this excellent fruit remarked to us, that it was not with him so much the prices that the fruit would be likely to command the present season, as the price of brandy. That we are to have an abundant crop is beyond all doubt. The matter of drying peaches to advantage, must depend wholly upon the expense of preparing them for the process. Peaches should never be dried without skinning, though very many are; and as the process makes a very large item of cost in their preparation for the drying frames, it may possibly be dispensed with, with paying results, where labor is high. There is a great difference in the relative value of different varieties of peaches for drying; and in countries where they are prepared as an article of considerable export, varieties are cultivated purposely for drying. They are those that possess the quality of a high peach flavor, combined with a dryness and toughness of the pulp—



qualities that are not desired when eaten in a fresh state. The juicy, melting peach is not the peach for drying; and it is the indiscriminate use for drying of any or all kinds that cannot be otherwise disposed of that often renders the process so difficult. The soft, watery pulp of the peach is very difficult to dry, except under favorable circumstances; but take such as have a pulp or flesh of proper consistency, and no fruit dries more readily or pays better; but then, there is a right way of preparing even the peach for drying, that but few practice.

Where the business is extensively practiced, as in Chile and other portions of South America, frames, composed of wicker work, similar to a cane-bottom chair, are used for spreading the peaches upon for drying—the object being to secure as good a circulation of air around the fruit as possible, at the same time that it is exposed to the heat of the sun. Peaches for drying should not be quartered merely, in the usual way of preparing apples for drying, but, after being peeled—if the consistency of the pulp or flesh will admit of its being peeled—it should be taken in hand precisely as for paring, and the same movement performed as in paring, except that in place of going only skin deep, the knife is made to penetrate to the stone all the way round as the peach is turned, till the whole flesh is turned off, in appearance like a coarse, heavy shaving or curl. These curls are then spread as closely as they can be upon the frames, where they remain, with an occasional turning, till sufficiently dried. Plain boards can be used in place of frames, but they are not as good for several reasons: They do not admit of as perfect a circulation of the air around the fruit, and they absorb more of the juices of the fruit by contact, than the wicker frame, which juices ought to be entirely retained in the fruit, the watery portion only evaporated; and one reason why the cutting of the flesh of the peach into curls, instead of short, thick pieces, is preferable, is that there is less surface comes in contact with the board or frame. Any variety of the peach is easily and expeditiously dried, if prepared for the drying frames or boards a few days before they shall have become perfectly ripe; and when it is known that the fully ripe peaches cannot well be disposed of in that state, they should be gathered for drying before the pulp becomes soft.

The preparation of the juice of the peach for brandy-making is simple and easy. The peaches should be allowed to become fully ripe before they are mashed for fermentation; the reason for this is, that the riper the fruit the more sugar it contains, the sugar being the basis of the spirits obtained by fermentation, and afterward separated by the process of distillation. It is the practice of some to mash the peaches by any simple and easy mode, immediately press out the juice, and after allowing it to ferment in vats or casks, send it to the distillery. We have practiced a better mode than this: It is to mash the peaches, and let the whole mass of skins, pulp and stones remain together in tubs or vats till the fermentation is nearly complete; then press out ready for the distillery. The advantage claimed by this mode over the first is, that considerable more of the flavor of the peach is imparted to the brandy, when the juice is allowed to ferment upon its pulp, or flesh and skins. The process of distillation is simple, but it does not come within the scope of our experience. W.

## DOMESTIC WINES.

**F**ORMERLY, this term was applied only to such wines as were the product of other fruits than grapes, because the juices of such fruits could be produced in abundance where the grape could not be cultivated to advantage; but now that the vine can be grown and the grape produced almost as easily and surely as any other fruit, the wine from the same becomes as much a domestic wine as any we can produce. Still, there will be an immense quantity of wine annually produced from the juices of other fruits than grapes, and it is for those who desire to try their hand at the manufacture of such wines that the present hints and directions are penned.

Almost all the acid fruits, and many of the sweeter ones, contain the elements of a very good wine, but not all of them in the right proportions. The grape comes the nearest to containing all the requisites for a good wine; and yet, it is nothing uncommon that other ingredients are added to its juices in the production of some of the finer wines of commerce. The element most in demand for admixture with the juices of fruits in the production of wines, is sugar. The grape, in many of its varieties, contains large quantities of sugar; whilst many of the more sharply acid fruits contain but little. Sugar is indispensable in the production of most wines, not only to give them the requisite sweetness where a sweet wine is desired, but also furnishing material to be converted into alcohol by the process of fermentation, thereby giving to the wine the requisite body or strength. There are some fruits that contain but little sugar, but large proportions of starch and gluten, that produce spirit by fermentation, and wines from such fruits, whilst containing sufficient strength to enable them to keep any length of time, and even improved by age, may yet lack sufficient sweetness to make them a palatable wine with many.

The gooseberry has long been in use for the production of an imitation champagne wine, and so closely is it made to resemble the genuine article, good judges are often deceived. Within the last five years, the juice of the leaf-stalks of the rhubarb or pie plant has taken the place of the gooseberry to a large extent in the manufacture of champagne, as well as some of the finer quality of still wines, both light and heavy; the differences in the processes of manufacturing and the proportion of sugar used and its quality, determining, to a very great extent, the quality of wine produced. With nearly all the juices of the more acid fruits, a certain quantity of water as well as sugar, is supplied in preparing it for fermentation. The proper proportion will vary as the expressed juice is found to be more or less dense or thick. Thus, in nearly all cases where the juices of fruits other than grapes are used, the proportions should be nearly as follows: One gallon of fruit juice, to one gallon of water, and three pounds of sugar to each gallon of mixture. Very good currant wine is made by adding two gallons of water to one gallon of juice, and three pounds of sugar to each gallon of mixture. Two pounds and a half of sugar will make a very fair wine, but it will not contain as much body as when a larger quantity is used.

Rhubarb juice can be mixed with an equal quantity of water, and the addition of

three pounds of sugar to each gallon of the mixture will produce a good wine. If more than about three pounds of sugar are used, too much of it remains unchanged by the fermentation, and the wine is rendered too sweet for most palates. It will be observed that almost any of the juices of fruits, with the addition of water and sugar in the proportions of from one to two gallons of water to one of juice, and from two and a half to three and a half pounds of sugar to each gallon of the mixture, will form the basis for a variety of excellent domestic wines. Ferment in casks nearly full, with the bung laid lightly into the bunghole till the hissing of the fermentation has nearly subsided—say in from two to four weeks—then set in the bung moderately tight. In from three to six months, it will be in fair condition for use. Of course an infinite variety of tastes and conditions can be given to such wines, depending on the quality and kinds of fruit used, and the manner in which the fermenting process is conducted. We shall say more upon this subject in a future number.

W.

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### ART, SCIENCE AND INVENTIONS.

**ARCHITECTURAL IRON FOUNDRY.**—We have recently visited the extensive Iron Works of James L. Jackson & Brother, in Twenty-Eighth street, near Second Avenue. It is a truly magnificent establishment to be built by private, individual enterprise. The buildings are not quite completed, but when in working order, they will employ two hundred and fifty men and a capital of over \$200,000. They cover twenty-six lots of ground, and comprise all the requisite accommodations for carrying on architectural iron works, including both domestic and naval architecture, and both cast and wrought iron work. For the heavy castings there is one foundry, and for the light castings, which require different treatment, there is another.

The heavy foundry lies along Twenty-Ninth street, and is one hundred and sixty feet long by fifty feet wide. There these heavy castings are made which astonish the uninitiated. Several tons of melted iron pours along in a fiery torrent, and sinking into the mold, seeths and fumes, whilst the whole building is illuminated with a lurid glow, giving the operatives a most unhealthy appearance. From the mold there is taken forth an entire shop-front, or perhaps a section of cast iron sidewalk, with its gutter and curb complete, or a column, plane or fluted, cylindrical, clustered, or spiral. In short, in this foundry everything that is carved in stone for external decoration on the grand scale, is produced in a purity of style, a justness of proportion, and an elegance of finish, that delights the eye of an artist; while the cost—one-third that of stone—is sure to meet with the approval of the economist. The extent to which iron is now employed in architecture, is not generally known. Formerly, truss-beams and girders were made of wood, and were finished with stucco on the surface; now they are made in this foundry of cast iron, with wrought iron tension rods, and they are finished, ornamented and all, in their own material—except the painting. These are of incomparably greater strength than the wooden ones, and are not liable to be destroyed by fire like wood. Shutters and doors are always made



of iron, and the doors are finished in the richest style of panneling and carving, at a small advance upon the cost of the material. The shutters and doors are fire and burglar proof, in addition to being ornamental. In this same heavy foundry lintels and sills of windows, of the most elegant design, are cast either completely ornamented, or with suitable provisions for receiving the ornaments, which are riveted on afterwards. Also whole entablatures, arches, chimneys and cornices are cast at one operation. Side by side with these appliances of domestic architecture, are made those important adjuncts of naval mechanism for which this firm is noted. Windlasses, double-acting and power, have their heavy castings made here before they are put together in the machine shop. Capstans and mooring bitts are here made of iron, which are lighter, stronger and better, than any other kind. In this foundry, in short, all the heavy castings used in ship machinery are made, in addition to those required in building.

The light foundry is one hundred and fifty-six feet long by ninety wide, and is devoted to the finest species of iron founding. Here the utmost skill of the workman is required; for, though the quality of the iron to be run is an important consideration, it is not near so much so as the care with which it is employed. The sand must be passed between rollers to crush all lumps; it must then be sifted to insure that it is uniformly fine, and must in molding be handled with great care. The richly or delicately carved patterns are first made in wood; from this a sand mold is obtained in which a soft metal original is obtained. This is next chased up and another sand mold is got from which an iron casting is in turn obtained. If this, on cooling, does not warp out of shape, it is preserved as a permanent pattern. It is seldom, however, that a first or second iron casting is found to cool without warping, and consequently the soft metal pattern must be so bent as to give the opposite direction to that in which the iron is liable to warp in cooling. After six or eight trials, an iron pattern is generally obtained correct for future use; then an unlimited number of copies can be obtained. By this means, those beautiful forms of cast iron railings are produced, which we see on verandahs, stairs in court yards, cemeteries, etc. In this light foundry, all detached architectural ornaments are cast, such as capitals of columns, trusses, spandrels, etc., together with all kinds of cast iron gate work. We here saw some exquisite designs brought out for summer screens, they being of the most delicate and chaste kind, and the material simple cast iron. The play of the foliage was of the softest and most graceful style of modeling, and the lines were all distinctly marked and well distinguished. It was surprising to see such fine work produced in so coarse a material.

The patterns for the foundry are produced in the pattern shop—another large room. There a design is drawn on the wood for the pattern, and the carver, or pattern-maker cuts it into its finished form. There, also, the soft metal originals are bent, etc. The production of originals is a slow and expensive operation. The patterns accumulate rapidly, and require a large six-story building for their storage; and in that, patterns which have cost a princely fortune are now stored away like books in a library, being classified and numbered with such system that any can be obtained

when required for use. For the wrought iron work, there is an immense blacksmiths' shop attached to the foundries. Here the celebrated "rolling shutters" (Mettam's patent) are manufactured and fitted to iron door and window frames. All designs of window guards are also made in the blacksmiths' shop, besides the wrought iron for ship work or buildings.

In the machine shop there are all appliances—lathes, drilling machines, etc.—for the manufacture of windlasses, capstans, steering apparatus, etc., etc., for ships' use; while in the center there is a large yard, one hundred and thirty-eight feet square, for coal, iron, etc. There is now a twenty horse-power engine employed for plowing and working the lathes and other tools, and there are boilers up for a fifty horse-power engine, which will be in place when the works are quite completed.

The iron employed in these works is a mixture of Scotch and American, in proportion of about three Scotch to one or one and a half American, the latter being of advantage in preventing the formation of "keesh" in the furnace. This large establishment and big business has been the result of indomitable energy, attention and skill. Mr. James L. Jackson started business in 1842, at 315 Stanton street, in a moderate way, yet with some encouragement from his friends in the grate business. At this time, iron was beginning to be applied to fine castings—it having been previously used principally for that purpose at Berlin. And at this date it was commenced also at Peekskill. Mr. Jackson perceived that it was of unlimited application to architecture, and the making of grates and railings; accordingly, he devoted himself to perfecting this application. Subsequently, when his business increased, he sold out his heavy foundry and ship works to his brother, Mr. Peter H. Jackson and Mr. Austin Throckmorton, who carried it on for years in Goerck street. Now, the brothers are united in the one firm, which bears the title at the head of this article. They have had eminent success heretofore, and doubtless will continue to possess and merit their good fortune.—*Practical Mechanic.*

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**GOLD MINES OF INDIANA.**—Having just returned from the "Brown County Gold Mines," of this state, (Indiana) I send you an account of them. The place where the gold has been discovered in the largest quantities is about nine miles from Nashville, and five from Morgantown. It is at the foot of a range of hills which form nearly a half circle. At the base of this hill, is a creek, in which there are already a few sluices arranged. The gold has mostly been in dust, although some few small lumps have been found. The largest I saw was about the size of a grain of corn. It is supposed by some old Californians that the dust has been washed down off the hills. They intend to commence digging as soon as the weather will permit. I found fifty or sixty persons engaged in washing. They have made as high as six dollars and thirty cents per day. The gold is of a fine quality, and is sold in Columbus for twenty-two dollars per ounce, which I am told is very high for California gold. From the survey that I made, I think that we will have some gold mines opened the coming season. C. T. P., to the *Cincinnati Gazette*, Feb. 28.

**LA MOTHE'S IRON CAR FOR RAILROADS.**—A splendid car, made upon the La Mothe patent, has lately been put on the Boston and Worcester railroad. It is intended to seat sixty passengers, and is 46.5 feet long. It contains 6,200 feet of band iron, and 9,200 rivets. The bands are two inches wide and one-seventh of an inch thick, except under the floor and platform, where it is from four to six inches wide. In point of strength, durability, perfection of workmanship and beauty of finish, we believe this to be the finest car ever built; and that it is destined to introduce a new and most important service of economy and safety upon our railroads.—*Railway Times.*

We are glad to find this valuable invention coming into use, and hope soon to find it universally adopted. There is, in the use of wooden cars, a decided waste of power, for each car weighs, on an average, two tons more than a similar car on this plan. Even the small two horse cars for city railroads, when made of wood, are one ton heavier than similar ones made on La Mothe's patent; while the largest size passenger cars are from four to five tons heavier.

The drawing of this useless weight along the track not only consumes power, but also tends to destroy the permanent way; while the heavy cars labor with their own unwieldiness and wear themselves out, requiring constant repairs. On the other hand, the La Mothe cars, being light, strong, of the toughest material, and constructed on the most correct principles, last longer and do not destroy the road so rapidly as others. Besides, if an accident should occur, the La Mothe cars will not splinter to pieces, nor can the body separate from the platform. There is not therefore, near so great a risk to life and property by their use, as by that of wooden ones. An iron car cannot take fire, so that the appalling fate, to those imprisoned among a piled up train, of being burned alive, is impossible with them. If we carefully consider the present state of railroads and their history, we must be prepared to indorse the following conclusions:

That increased safety in railroad traveling is loudly demanded by humanity, apart from all pecuniary considerations; that to extricate the railroad interest from its present unsatisfactory position, a great reduction in the working expenses of the road is absolutely necessary; that a large portion of these expenses, arising from the incubus of superfluous non-paying weight, the lessening of this burden is an object of primary importance; that increased safety and diminished expenses will promote both passenger and freight traffic; that the La Mothe iron car, by its strength, durability, elasticity, lightness, etc., supplies the means of attaining these ends more feasilily than any project relating to railroad reform which has been brought forward; that railroad companies and the general public have thus a common interest in the adoption of these cars; that the iron-masters of the country are interested in favoring them, for the sake of promoting the demand for iron; that car-builders can readily adapt their works to the new manufacture, and will find it to their interest to do so rather than have the business taken up by other parties.—*Practical Mechanic.*



## SUMMER PRUNING OF THE VINE.

EDITOR CULTURIST:—But recently a subscriber to your valuable periodical, without having as yet obtained the back numbers of the current volume, I am without that information so much needed by the novice in grape-culture, as relates to the summer pruning of the vine. Please tell me of the object sought, and the effect of pruning at different seasons of summer, as well as the mode of doing it. I have but one acre of vines as an experiment to test the soil and climate of south-western Yolo, as a wine-producing locality; but, small as my beginning is, I would like to avail myself of all the light and experience of others in my power to obtain. I never attempted the culture of a single vine previous to 1859, and therefore know but little about it. Will the CULTURIST editor give us his views, and oblige,

Yours truly, CATAWBA.

In reply to CATAWBA, we would, in the first place, state that, as his experience in vine-culture commenced in 1859, his vineyard has only had one season's growth, and can hardly be said to have arrived at an age so as to require summer pruning. After several years' experience in vine-culture in California, we have found that it is best not to summer prune the vine the first and second years; in fact, not until the season previous to which we intend it shall bear a crop; because the young vine, producing a considerable amount of its foliage near the ground, is enabled to produce a greater quantity of strong roots, in proportion to the equilibrium of foliage and its proximity to the roots.

The first and paramount object in vine-culture is, to get a stocky and well established plant; and to do this the vine should be pruned down to two or three eyes in the winter time, after all the leaves have dropped off, and before the buds begin to swell in the spring, while the plant is perfectly dormant. Thus, there being a great amount of sap to rise from the roots, and the small quantity of branches left to receive it, causes the shoots to grow with proportional vigor.

The effect of summer pruning is to check the growth of the roots, as by this mode, the supply of descending sap is greatly restricted, which retards the formation of woody matter on the stock as well as its roots. When a vine has arrived at a condition for fruiting, we recommend summer *pinching*, rather than pruning—the object being, not entirely to check the flow of sap to the ends of the branches, but to so check it as to cause a more thorough development of the canes and buds to be left at winter pruning for the ensuing crop. Where the knife is used, too much wood is apt to be cut away—the operator being inclined to make the incision where the wood is mostly hardened; this cause the buds at the point of termination to burst at once, continuing thereby the scarcely interrupted, upward ascent of the sap; whereas, by pinching, which can only be done when the shoot is soft, and as the vine is suddenly deprived of the constantly expanding, terminal bud, which affords the channel of out-flowing sap, the latter becomes confined to the present limit of the cane, causing the emission of lateral shoots throughout its length. We incline in favor of allowing

these lateral shoots to grow until winter pruning takes place, as we believe they materially aid the development of the large, dormant buds just upon their base, which become the fruit spurs of the next season.

We only recommend summer pruning for the vines on situations rich and moist, which are apt to produce an excessive growth of long-jointed canes, which, in their far-reaching propensities, exhaust the strength of the plant, leaving the fruit-bearing portions feeble and inactive. Vines thus situated, we should give thorough and frequent summer pinching, and leave the winter pinching until they begin to bleed in the spring, training them high, with an amplitude of top, so as to obtain a greater subdivision of arteries to distribute the excessive supply of sap, incident to moist, rich lands. The reverse method applies to dry, poor localities. F.

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### SELECTED ITEMS.

**DEEP OR SHALLOW VESSELS FOR MILK.**—Many suppose that the quantity of butter obtained from milk depends greatly upon the treatment before churning, particularly upon the kind of vessels it is kept in. Thus, some prefer deep pans, and some will use none but shallow; some add saleratus to the milk to keep it sweet longer to give the cream more time to rise. Experience has convinced me that the amount of butter depends on the quality of the milk, rather than on its management. All the butter contained in the milk can be obtained, and no more. I remember fifty years ago that my father, who had thirty or more cows, tried several experiments to ascertain this point. He first procured large, flat "keelers,"—wooden tubs about four inches deep—but the labor required to keep them sweet was so great, that a number of twelve-quart tin pans were also used. There was no difference in the amount of butter obtained from each. After this he was persuaded to have smooth, oak tubs made, each holding about four gallons, having been told that the milk would remain sweet much longer in them and the cream would be increased, but there was no improvement in the quality. I have for years used twelve-quart tin pails for convenience in handling, and find by keeping the temperature right, to allow a moderate cooling and a gradual rising of the cream, I get all the butter there is in the milk, which is the best any plan can do.—*American Agriculturist*.

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**HOW MUCH SEED PER ACRE?**—This question can be answered only approximately. A table giving a fixed invariable quantity would often mislead, for the reasons that quality of soil, method of cultivation and location all vary the certainty and manner of growth. Where, for many reasons, it is difficult to make seed "take," it may require an addition of as much as twenty-five per cent., or one peck to the bushel. Again, on very rich land, where grain would tiller exuberantly, it is the practice to diminish the amount sown. With crops like roots, onions, etc., where thinning is practicable, it is advisable to sow liberally enough to allow for this. Individual judgment must be exercised. The following table, republished from volume

XIV, in answer to a call from many subscribers, shows the smaller and larger quantities usually allowed to the acre.

Barley, broadcast, 1 1-2 to 2 1-2 bushels; in drills, 3-4 to 1 1-2 bushels. Beans, 2 to 3 bushels. Beets, 3 to 5 lbs. Buckwheat, 1 to 1 1-2 bushels. Carrots, 2 to 2 1-2 lbs. Corn (Indian) 1-4 to 1 1-2 bushels; Broom corn, 3-4 to 1 1-4 bushels. Flax, for seed, 1-2 to 1 bushel; for fiber, 1 1-2 to 2 1-2 bushels. Grasses—Red Clover, 10 to 16 lbs.; White Clover, 4 to 8 lbs.; Blue grass (Kentucky) 10 to 16 lbs.; Red Top, 11 to 18 quarts; Orchard grass, 20 to 30 lbs.; Timothy, (herds grass) 12 to 18 quarts. Hemp, for seed, 3-4 to 1 bushel; for fiber, 1 to 1 3-4 bushels. Millet, 1 to 1 1-2 bushels. Mustard, 10 to 20 quarts. Oats, 2 to 4 bushels. Onions, 4 to 5 lbs. Parsneps, 3 to 6 lbs. Peas, in drills, 1 1-4 to 1 3-4 bushels; broadcast, 2 to 3 1-2 bushels, according to the size of the seed. Peanuts, in hills or drills, 1 to 2 bushels. Rye, in drills, 3-4 to 1 bushel; broadcast, 1 to 2 bushels. Turnips, 1 1-2 to 2 1-2 lbs. Wheat, in drills, 3-4 to 1 1-4 bushels; broadcast, 1 1-4 to 2 1-4 bushels.—*Id.*

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DEATH ON LICE. It is not always poor cattle that become inhabited with these parasites. Fat cattle, owing to foul stalls or some other cause, are occasionally caught with the pests. Some apply *Unguentum*, or Mercurial ointment, which, to be sure, is death on lice, but also, not unfrequently, death on cattle. It is an active poison when taken into the stomach of cattle, as it is sure to be, if put within reach of their tongues. It should never be used. Others resort to tobacco—a safe remedy, but still oftentimes injurious to the animal. The only effectual remedy, that is at the same time safe, which we have ever tried is oil, or grease. These parasites lay their nits upon the hair, and it is only when the hair is dry that they can make the eggs adhere. If the hair be kept well lubricated for a few days with sweet oil, or any kind of grease that will not become sticky, the insect will decamp for dryer quarters. They attempt to climb the greased poles and give up in despair. Armed with an oil bottle you may effectually rout the enemy, without risking the health of your cattle.—*Id.*

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SULPHUR FOR SHEEP TICKS.—Wm. P. Chase, writes to the *Agriculturist*: "In the January number, page 27, I notice a doubt as to the efficacy of sulphur to expel ticks from sheep. I have no doubt; I know it will do the thing much more efficaciously, and with much less injury to the sheep, than the nauseous mode I have practiced of dipping them in a decoction of tobacco, cicuta, etc. Since 1841 I have used no other preventive to keep ticks from sheep, or lice from cattle. My mode of feeding is to have boxes about one by one and a half feet square, with sides about three inches high; mix as much flowers of sulphur with salt as can be made to stick to it, and put in the boxes for sheep or cattle. Feed it any time, but particularly in warm weather. Since 1844 I have seldom found a half a dozed ticks to the hundred sheep at shearing time, and some seasons none. I think feeding sulphur a great help in



keeping clear of the foot-rot. My sheep have neither ticks nor foot-rot, although there is much of it near and round me.—*Id.*

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**PLANTING SHRUBBERY.**—Too little attention, it seems to us, is given to this feature of ornamental planting. Our rural improvers generally persist in setting out coarse timber trees, in rows like an orchard, all over their grounds, and finishing off their work by putting a lilac or a few rose bushes around the door-way. Well, this is better than nothing; but an improvement can be made on this, as the following hints may show:

Let the forest trees—except on large places—be few in number, and confined mostly to the boundaries of one's premises. The trees near the house should be of a smaller size, and such as have smooth trunks and branches. A few shrubs may be set near the dwelling. If the premises are small, like most village lots, single specimens of large shrubs may be set on the lawn and trained up as miniature trees. This will give the place an appearance of larger extent than though it had been set with forest trees. Shrubs may also be planted in groupes and masses, arranging them according to their respective heights. They may also be used as screens to hide disagreeable objects, or to conceal one part of the grounds from the other. They appear very well, also, when used to encircle a flower garden; the central beds being occupied with plants, and the boundaries set with shrubs—the lowest in front and the highest in the rear.

As belts to conceal from the house the outer fences of one's grounds, they are also useful. The pleasure walks may be led around in front of these belts, and so afford a pleasant view of them all through the season. If they are set here, instead of being crowded in front of the house, the lawn appears larger, and every way better. A good assortment of shrubs will afford one a variety of flowers nearly all the summer, and that with far less trouble than any other class of plants. We will here mention a few of the desirable sorts to plant: Azaleas, in variety; *Pyrus japonica*, Robinia, Spiræa, Deutzia, Euonymus, Hibiscus, Hydrangea, Philadelphus, Syringa, Viburnum, Weigelia, etc. A shrubbery is a permanent affair—one of the "institutions" of a country place, and should therefore be made well at the outset, and afterwards taken care of. Those well-proved and fast friends affords us, in the long run, the greatest satisfaction.—*Id.*

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**LIQUID MANURE FOR GARDENS.**—Every man who has a sink spout has a fountain of wealth at his back door. You laugh at the idea, for you have never tried it. Make the experiment and you will laugh at your own simplicity for overlooking a stream that abounds with gold dust, as really as Pactolus. The application of liquid manure to meadows, on farms may be at some distance in the future, but for its use in gardens the time has already come. A good many laborers, mechanics and villagers are already trying it, and finding it just the thing.

If you have nothing better, sink a half hogshhead a foot or two in your garden, in

the most convenient place, and run a leader from your sink spout into it. A watering pot is the best thing to put it on with, but not at all essential. An old pail and dipper, kept for the purpose, will answer. When the plants are well up and begin to grow nicely, apply the liquid two or three times a week, just at night. It is excellent for vegetables and the small fruits, and for grapes and pears until they begin to approach maturity. It not only increases their size, but improves their flavor.—*Id.*

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### TULE LANDS OF CALIFORNIA.

IF we were asked the question as to what kind of lands in this state we considered the most valuable prospective for agricultural purposes, we should hesitate in deciding between the comparatively untouched hill-sides of the mountain districts, and the still more neglected tule lands, or swamps, as they are generally regarded. Indeed, we think it requires little forecast to perceive that the time is not far distant when our great valleys, which are yearly producing their stores of exhaustive cereal crops, will become unproductive from sheer barrenness. The system of cultivation given these lands, is of an impoverishing character, because of the vast amount of atomic matter extracted annually from the soil, and sent to distant markets for consumption, without ever being returned. It may be stated that our grain fields are losing by each successive harvest, from two to five tons of material, in the amount of grain sent off and straw burned on the ground in heaps where the thresher left it; and agricultural chemistry will demonstrate the quantity of fertilizing substance yearly extracted from the soil by this bad husbandry, for which there is no adequate return.

We may be looked upon as croakers, when we state that our valley lands, which have produced so wonderfully, are being less sought for; and that the inquiry is frequently made as to how these failing lands may be restored to the state of productiveness they were found to possess on first being subject to cultivation by the American settlers. In California, the various occupations connected with agriculture, are almost as distinctly separated as the Guild trades of Europe: one being a stock-raiser, keeping his herds among the hills or beyond the cultivated limits; while another has his domain inclosed and wholly occupied by grain fields. Thus, it will be seen that the production of animal manures, in sufficient quantities to renew the fertility of the soil, is an impossibility, as cattle are seldom stall fed, or yarded in the winter, as in Europe or the Atlantic states, where a large proportion of the produce of the farm is stored and fed out in winter, producing, with the aid of muck for composting, sufficient material, not only to keep up, but to greatly add to the productiveness of the land.

In California, this course is difficult under our present system of cultivation, as we have no muck swamps to draw upon—the topography of the country being such that there is little accretion of leaf mold in the cultivated districts, in consequence of

the almost total absence of forest trees. What modes should be adopted to bring these lands back to their original productiveness, we shall not now attempt to discuss; our present object being to reply to the many inquiries addressed to us, asking information with regard to tule lands. The frequency and earnestness of the inquiries, with regard to the overflowed lands of the state, is an evidence that misgivings are felt in many quarters with regard to a reliance upon the uplands for grain and forage crops; and we repeat that, if asked to predict which would be the most valuable lands of California, we should hesitate in pronouncing between the foot-hills of the Sierra Nevada and the tule lands; but hazard the opinion that either will eventually surpass in value our present grain districts.

The great value which lands will attain in our hill and mountain districts, will be on account of their eligibility for vineyard and orchard sites—they being unquestionably our most reliable and good producing wine lands. We sometimes have a misgiving when we look at the great orchards and vineyards planted out in our open plains, where there never yet flourished umbrageous trees. We are inclined to the opinion that the horticulturist is more generously rewarded when his labors are directed to those localities where nature has long been planting her rude and stately forests, or on river margins, overflowed by the torrent which brings the liquid unction from many a moldering leaf.

The main body of tule lands in the state, lie in the valleys of the Sacramento and San Joaquin rivers, reaching north and south a distance of hundreds of miles, varying in breadth and amounting to millions of acres. These lands are as variable in the character of their soil, as widely differing in composition. In some places they are of a sticky clay consistence, interspersed with streaks of alkali; while over the predominant portion, it is a loose, black, vegetable mold, very light, friable, retentive of moisture, easily cultivated, and remarkably productive. As the title to these lands lies in the state, liberal, intelligent legislation is needed to place them in a position so that they can be taken up and improved by our people, free of all doubt as to the tenure under which they are held. At present the law is vague, and an attempt to follow it is liable to create inextricable confusion.

Now that the state is about to take the management of the prison labor into her own control, it occurs to us that a considerable portion of that labor could be devoted to the reclamation of these state lands advantageously. There are vast bodies of these lands near the mouths of the Sacramento and San Joaquin rivers, which would require but a slight embankment to keep from being overflowed; and it would be a perfectly practical matter to move ships' hulks in the rivers alongside of these lands, so that those prisoners having the shortest terms to serve, could be kept in them nights, and employed during the day at ditching. We are confident that if these lands were surrounded in this way with a thorough embankment, and then surveyed into sections and sold, that they would command quick sales, and at such prices as would defray the cost of keeping the prisoners engaged in the labor, and produce a surplus which would make, in time, a magnificent school fund, thus relieving us of the cost of maintaining the prisoners where they are, in comparative idleness, and thereby



amassing a school fund commensurate with the future of California, and adding vastly to the taxable property of the state—as these lands thus reclaimed, would soon become most valuable grain and hay-producing farms.

Now, in order to have a proper understanding, with regard to the nature of these tule lands, it may be briefly stated, that they are of a comparative recent formation, upon a former sea bed, which can be distinctly traced during the low stage of the rivers, as far up as there is a tidal ebb, the alluvial deposit above which, increases in thickness as the river is ascended from its mouth. For several miles below Sacramento city, on the east side of the river, most of the tule lands have been reclaimed simply by shutting up the sloughs which formerly filled them by water from the river when it was high. These lands are mostly under a high state of cultivation, and, for the production of the cereal or root crops, are unequalled.

Having for three seasons used a portion of tule land for nursery purposes, we can speak advisedly of its value for the propagation of trees and plants; indeed, we have had better success on this land than on any other we ever used; and among the trees, vines and plants taking most kindly to it, may be mentioned the blackberry, raspberry, hop root, asparagus, the quince and apple tree—most especially the latter. A chief drawback to the production of early crops on the tule land is, that they are cold until the season is quite advanced. This we account for by the great quantity of moisture absorbed by the porous nature of the soil, and their low situation—being below the level of the river, from which they receive much humidity by percolation. Now, there being a prolonged and copious supply of moisture from the latter source, there will take place a great amount of evaporation from the soil, as warm, dry weather comes on. This evaporation has the effect of making the land cold—the natural effect of capillary attraction; and as a remedy, we have found that early and deep cultivation of these kinds of soils was of great benefit—particularly when we used a subsoil cultivator, which opened the ground so as to admit the warm air.

From the experience we have had in the cultivation of tule lands, and the opportunities for observation afforded by the operations of neighbors, we are convinced that the subject of drainage will necessarily be connected with the successful working of the tule lands of the state, particularly of those vast tracts near the mouths of the great rivers, which are affected by the tides, over much of which they flow at extraordinary stages.

Partial drainage will probably be afforded by the ditches, from which the material is taken to make the embankments. These ditches should be formed on the inside of the levee; should be made broad and deep, so as to receive the surplus water from heavy rain storms, as well as from the cross ditches it will be found necessary to run a distance from the river. The water can be discharged from the main ditch into the river by a waste gate at low tide, or by steam pumps or wind power—the latter being the cheapest, and quite as reliable about all of the great water courses of the state. Since there is a growing disposition to expel the Mongolians from mining occupations, may not this labor power be brought into valuable requisition in the reclamation and cultivation of the tule lands? Can we hear from any one trying an experiment with rice-culture this season?

F.

## TRANSFERRING BEES.

**A**S there are many who will this spring desire to try the Langstroth hive, we give all necessary directions for taking a swarm out of the common box, or any other hive, and putting it into this. The change is a perfectly safe one, both for the bees and the owner, providing the directions here given are strictly followed.

The first important step is to *get ready*. Prepare a roll of old cotton cloth, of any kind, as large as your wrist and a foot or more long, winding it with twine, or a small wire, from end to end. Obtain a large table or wide board on which to lay the combs as they are cut out of the hive, and place it where you will not be annoyed by other bees; vessels to contain the honey; a long, sharp knife to cut out the combs; a large chisel or other instrument to pry the hive apart; goose-quills or a wing to brush the bees from the combs; some wrapping-twine to tie the combs into the frames, and some water to wash off the honey which will adhere to the hands.

Now, fire the cotton roll and blow a few whiffs of smoke into the entrance of the hive, until the bees are driven well up into the combs, first stopping all holes in the top of the hive. Gently lift the hive from its stand and carefully turn it upside down a short distance away. Place another hive or clean box on top of this—mouth to mouth, and wrap a sheet around to prevent the bees from coming out; then rap smartly with flat sticks on the lower hive until the bees are mostly driven into the upper box, when this may be taken off and placed on the stand, and if the queen has been driven up, the bees will mostly go there. Take the hive to your table, or near it, where you have the new hive ready. With a saw slowly sever the combs from their attachments to the sides of the hive to be pried off; cut out the combs—placing all straight, thin combs by themselves to be fitted into the frames. Let every motion be gentle, as there is danger of injuring the queen, should she not have been driven from the hive. Reject all broken, irregular and clumsy combs; cut to fit closely and crowd into the frames, and when necessary, tie in with twine. Should there be any projections on the combs after they are fitted in, they must be trimmed down to an even thickness with the upper parts of the frames. Proceed until all the good combs are used, placing the frames in the hive as they are filled, those containing young brood in the center. Put in the empty frames and divide the spaces equally between all through the hive; put on the honey-board and stop the passages into the upper box. Spread the sheet in front of the hive and shake out the bees from the box into which they were driven. With a spoon, place a few at the entrance of the hive, and they will all soon run in. When the larger portion of them have entered the hive, it may be placed on the old stand. When the bees are all in, close the entrance so that but a single bee can pass at a time to prevent robbing. After three or four days, the entrance may be enlarged.—*Michigan Farmer*.

## SUMMER PRUNING.

A LADY friend writes us, to inquire how gardeners manage to get bushy plants—what they call “specimens.” With all her care and attention, the plants are “spindly,” or as a gardener would term it, long-legged.

At first, we thought to reply through our usual column of inquiries; but when we considered how little is actually known of the principle, not merely in its relation to the growth of specimen plants, but further, in its connection with the successful management of fruits and trees of every description, we conclude to devote a chapter to its elucidation.

Every one knows that if a grape vine be left to itself, free to climb over a tree or any other object, it soon learns to despise its terrestrial associations. It adopts for its motto, “onwards and upwards,” and in a few years you find it claims no attachment with the earth that bore it, beyond a long and bare stem. Every vestige of vegetation is at the topmost degree of altitude—not a twig or leaf remains below to tell you even that it is a grape vine. And so it is with a geranium, fuchsia, or any other pot plant; suffered to go “straight ahead,” its stem soon becomes bereft of foliage; and it stands amongst its plump and happy looking congeners that have enjoyed the blessings of good gardening, a picture of misery and wretchedness.

Now, the usual plan is to cut down such specimens, and let them grow up again; but every one knows that, to cut in or prune a tree, only makes it strive with renewed vigor to regain what it has lost. For instance, if we cut down a leggy geranium to within two inches of the ground, it will push forth several shoots that will all become as vigorous as the one cut away, and matters are not much mended. The plant will not be bushy, but will only get several straight stems instead of one. In fact, the more you cut a tree or plant, after the wood has once become ripened—that is, after the leaves at the place of cutting off have fallen—the stronger will it grow; and hence the maxim, that winter pruning increases the vigorous upward tendency of vegetation, and considerably strengthens it.

To make a bushy specimen, then, we must weaken this upward tendency; and this is accomplished by pinching off the points of the growing shoots. And it must be further remembered that only that shoot is weakened which is so pinched off; so that to make a plant bushy—so uniformly regular that the side shoots are fully as vigorous as those at the top of the plant—the top and strong shoots only must be pinched back. The side shoots must be suffered to grow unchecked until they get ripe, when they, in turn, may be cut back a little to make them branch.

The great beauty of this theory is, that it is so easy of application by the lady with her few window flowers, or the monarch of the gardening tribe who may carry off from the exhibition battle-field the gold medals of victory for his specimen plant; and the man who has but a few strawberries to grow, finds it as much to his interest to understand its bearings, as he who forces the most successful grapes. And we may say here, that it is, in fact, one of our friend Bright's great secrets in his successful management of the pot vine. By its application he gets his canes thickest



near the base of the vine, where it is usually the slenderest; and the bunches as large and as heavy when hanging but just above the soil, as those which are borne on the top of the cane, five feet from the surface of the pot.

By this theory, also, it is rendered unnecessary to have a dozen vines in one spot, so that some may be retained to fill the lower part of a trellis, and some the upper, as the branches can be so equalized as to be of equal strength at the ground and twenty feet above; and so, also, by it the dwarf pear can be made the beautiful objects Barry is so famed for producing. But there is yet another point wherein the theory becomes of great service to the practical gardener, which is the influence that pinching off the young growth has on inducing a flowering or fruiting condition.

Plants have two objects of growth: the nourishment of the individual plant, and the reproduction of its species; and in this respect they are identical with the animal creation. Flowering and fruiting is, of course, the beginning of the process of reproducing the kind in the seed, and this never commences until rapid growth has ceased. Weakening this rapid growth, then, hastens the fruit-bearing season; and as pinching the growing shoots has this effect, shy blooming plants are made to flower; and fruit trees that would grow too freely for years to bear well, soon come into a fruitful condition. Of course, the fruit or flowers are not so fine as they would be if no check to growth had been offered; but when it becomes a question of fruit or no fruit, we have no choice.

It is singular that, though this principle has been long known, it is so ill understood in practice. There are yet to be found very many excellent gardeners who will argue that it is injurious, under any circumstances, to mow off the leaves of strawberries, and look down on those who advocate the practice as a set of old fogies, with whom they would hardly like to associate in a horticultural assemblage of the most latitudinarian character. Yet, when we find men who have carefully experimented, assert that they have found the process tend to a greater productiveness in their strawberry crop, we are bound to examine their statements in all fairness; and when we know that some strawberries are so foliaceous as to seriously interfere with their fruiting character, and we also know that by cutting off foliage while the plant is growing, we tend to increase its fruitfulness, we are necessitated to admit that, under some circumstances, and in some situations, the practice has its advantages. Altogether, it is a subject well worthy of increased attention. It is one of the main springs of the great eminence modern gardening possesses over the past, and half has not yet been made from it that it is capable of affording.—*Gardener's Monthly*.

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SUMMER PINCHING.—By a judicious pinching in of the terminal buds of growing trees, in itself an art that can only be acquired by practice, almost any tree or shrub, if taken in season, can be made to assume almost any form desired. The beautiful pyramidal pear trees of nearly all foreign gardens, as well as other dwarf fruit trees, broad at the base and gradually tapering to a point at top, is the result of a systematic, summer pinching in.

DEEP PLOWING.

FOR the last ten years, nearly every one of our Atlantic agricultural journals has strenuously advocated the practice of deep plowing as essential to successful farming with undiminished fertility of soil. If there is not quite a difference of opinion among practical agriculturists, in relation to the advantages of deep plowing over the skimming system, why the necessity of continually bringing the subject to their attention? The fact is, with all the arguments that have been brought to bear, corroborative of the advantages of deep plowing, the masses of the farmers of every state in the Union plow shallow. Is this because they lack intelligence, keeping always behind the improvements of the age? or is it because they really believe there is more talk about, than real benefit derivable from deep plowing? If we were to scan carefully the reasons that continue so many of our farmers unchangeably wed to the practice of shallow tillage, we should find that there are other motives governing their practice, besides just those of improvement or impoverishment of the soil.

The mere difference in the power required between plowing four inches deep and eight inches, is of itself an item that, in many cases, would determine the depth of the furrow, irrespective of any consequences that might result to the soil. Instead of requiring just double the power to plow eight inches deep that it does four, it requires—as proved by careful test—a great deal more than double power. It is this extra expenditure of power that tells heavily upon the farmer's stock, and deters many from plowing deeply that otherwise would; for it is a matter of serious moment to the culturist of the cereals, whether he is enabled, with the animal power he can control, to put in two hundred acres of wheat, or only one hundred. Where it requires two yoke of oxen to plow eight inches deep, one yoke will easily turn a furrow five inches in depth. Undoubtedly, then, it is the saving of labor that determines many in adopting the five inch system.

There is not a doubt but that shallow plowing effects a more perfect pulverization of that portion of the soil plowed, than if the plow run deeper. First, because the furrow slice is more effectually turned bottom up, and secondly, because no harrow runs to the depth of eight inches. In the one case, all the soil plowed feels the effect of the harrow; in the other case, not. It becomes a question, then, whether plowing deeper than can be completely pulverized, has any advantage over a depth of furrow that can be all brought to a proper condition for the reception of the seed and its subsequent growth. Doubtless much depends upon the kind of crop to be produced. Fruit trees and deeply rooted vegetables of every description would doubtless be benefited by deep plowing—deep, almost without limit, so that the soil and subsoil are allowed to maintain their relative positions. But with the cereals, and particularly wheat, it is proved by repeated experiments that the subsoil can be made too open and porous for its growth. Four or five inches of the surface soil perfectly pulverized, in which to start the seed, resting upon a substratum of a firmer texture, but allowing the roots easily to permeate their hair-like interstices is a better preparation upon many soils than a furrow of eight or ten inches in depth; and

particularly is this an established fact in regard to the adobe lands of California.

This is probably another reason why so many of our intelligent farmers will persist in the practice of shallow plowing for the cereals; nor can we see any particular reason why the practice should be greatly deprecated. Five inches deep, with an otherwise perfect preparation, will grow less straw, in proportion to the grain produced, than deeper plowing. Because deeper plowing than has been uniformly practiced upon our old eastern farms, with the aid of manures, are the means now resorted to for the improvement of the soil, worn out, to some extent, by constant cropping, does it follow that our new and unexhausted soils require already a greatly increased depth of furrow for the production of the cereals, when fifty, seventy or an hundred years of constant cropping has only now brought Atlantic states' lands to their present condition of unproductiveness? Is there any very good reason why our soils should become exhausted under the same system of cultivation that is elsewhere adopted?

The present fertility of our lands can be continued unimpaired, whether a system of shallow or deep plowing be adopted, only by making the proper return of plant food to the soil. Manures of some kind must be applied, even with deep plowing, to keep any soil in a state of perpetual fertility under constant cropping. It is a fallacy, then, to be harping constantly upon the one string, "deep plowing," as the only necessity existing for maintaining a perpetual fertility of California soils. W.

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 "NOTHING TO LIVE FOR."

SAY you so, young man? Shame on your manhood for uttering such a sentiment! You have been disappointed, perhaps, in the attachment of an object on which you have foolishly set your heart—some "wee bit lassie," as Burns has it, whom you would clasp in your arms, were it not for fear of "mussing the dry goods up," has led you a willing captive to the charms of her beauty, and because she wearied of too easy conquest, and broke the chain that bound her to you that she might go forth, like Alexander, to subdue other kingdoms, you set tamely down and bemoan your hard fate as if you were the greatest martyr since Nero's time! "Nothing to live for!" I blush for your willful blindness. Arise and use the eyes that God has given for some useful purpose, and you will see misery enough in the world—real, genuine misery—to make you ashamed of the selfish Byronic sentiment which now unmans you. "Rouse to some work of high and holy love;" take your handkerchief down from your eyes, and use it to wipe away the tears of those who have some cause to be unhappy, and you will be surprised to find that your heart is still worth two or three broken ones. "Nothing to live for!" why, man, has all generous feeling left you, that you can look unmoved on the thousands of suffering ones needing your help, and go on your own lonely way, murmuring fretfully about the "desert sands," while you systematically avoid every oasis to which you might guide the bleeding feet of many a wayworn traveler?



There is work enough in life to awaken your greatest endeavor—work, too, so high and holy that it would not disgrace the highest archangel in the courts of heaven. Work valiantly, then, with tongue and pen, in the cause of human freedom; be ready and willing to give up everything—wealth, and honor, and good report, and life itself, if need be—for the good of your fellow-man groaning under the burden of oppression. Intemperance is slaying its tens of thousands on every hand; try what your arm can do to stay its ravages. Don't be content with saying, "God help the poor!" do it yourself. Some of your dainty, refined sentimentalism would be shocked out of you, if you could hear the plain, unvarnished tale of privation and sorrow which many a poor laborer could relate to you—a tale, perchance, of the gradual fading away of a beloved wife or daughter, till the cheek and lip which once rivaled the June rosebud are pale as the last autumn flowers, and hope and strength die out of the heart. Yet, without even asking if these things are so, you are doing nothing—absolutely nothing—except to breathe your life away in sighs and lamentations over disappointments, under which it is not the part of true manliness to falter for a moment.—*Life Illustrated.*

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### SUMMER FALLOW.

WE again call the attention of our farmers to the importance of summer fallow, and at the hazard of reiterating some of our previous opinions, desire again to insist upon the absolute necessity of adopting this, the only method by which large bodies of lands can be restored to anything like their original state of productiveness, when first subjected to the American exhaustive system of cultivation. Now, when we apply the term summer fallow, we don't mean that kind which consists of plowing under a green crop before the rains are over; because, by this practice, there will afterwards start up and go to seed many straggling weeds, which make the land foul for the next crop of grain, to avoid which some farmers are in the practice of plowing the second time; this turns up the fresh growth of green material turned under, before it is rotted, so that the gases escape, giving but little benefit to the land.

We have seen the most beneficial results follow from plowing under crops of volunteer grain, weeds and grasses which had nearly completed their growth, but were yet in a succulent condition, so that when they were turned under the ground, the heat, from confined gases, produced a rapid decomposition, leaving the land in high and friable condition, and in a good state for early fall sowing. A heavy roller should be passed over the crop to be plowed under, going around just such parcels, and the same way it is designed to plow; by this course the green stuff will part, so as not to tangle or clog on the coulter and will be turned handsomely. After this, the roller should again be passed over the ground in order to press it down as much as possible, and level off the edges of the furrows, which otherwise would be dried by exposure to the air, and not subjected to the sweating, heating process produced by the fermentation of the buried vegetation.

It is a matter of astonishment to us, that farmers should persist in sowing their entire breadth of land, when it has been so often demonstrated that one-half of the area, when subjected to summer fallow, would produce a greater number of bushels, and always of a better quality. We have often seen them harvest large fields which would not pay the expense of reaping and threshing, which, had it been plowed into the soil, would have furnished the nutriment for a remunerating crop the ensuing year. By summer fallowing light, poor soils, or those badly infested with mustard, the land will be in a suitable condition to sow before the fall rains, as such grounds will be so mellow, that a grain drill, harrow, or cultivator will work it in effectually during the dry season. The advantages of this plan are, that the work is done when the days are long, teams in good condition for work, and there is no detention on account of rainy days. Grain thus early sown springs out of the ground at the first fall of the rains, and will get the start of weeds or mustard, and ripen in the spring so as to be exempt from the summer's drought.

As we have had late, copious rains, we deem it not yet too late to plow under crops for summer fallow; and as the prospect is that our incoming harvest will be unusually large, would it not be well for our farmers to summer fallow a portion of their fields? If one-third of all the grain in the state was cut for hay, or turned under as manure, thereby saving a great expense in the matter of stacks and harvesting, would not the other two-thirds bring them quite as much money—especially of net profit? You may say, Mr. Farmer, that this is very good advice, but given most too late for this season; and perhaps you are right, as we can look out of our sanctum, away over upon the Contra Costa hills, already beginning to beck the yellow harvest. But we are not going to be shaken off, if you are getting into a great hurry, as we intend to go into the harvest field with you, and shall find a great deal of fault with some of your practices; so look out for our next number, in which you may find us asking some important, personal questions.

F.

### “IMPROVED BREEDS OF CATTLE”—NORTH DEVONS.

BY C. ARTHUR ELY.

I HAVE been much interested in an article in the May number of the *CULTURIST*, opposing the ideas which have been advanced on your pages, respecting the North Devon cattle, as being well suited to California, and claiming for the short-horn Durhams the superiority. No one can feel a more earnest love or profound admiration for that breed of cattle than myself. I love to feel the soft, velvety hide of the well-bred and well-tended Durham; and I entertain a real reverence for his magnificent proportions. But most men, in most parts of the world, who have engaged in stock-raising, have done it for the purpose of making *money*, and a failure in that will not be compensated by being able to exhibit an animal

showing the grandest proportions that ever were bounded by the outline of a single creature.

Your correspondent speaks of having had no experience except with "short-horn, graded stock," and because he finds them superior to his common and native cattle, he infers that they are therefore, better than the Devons. The fact that those cattle that have been improved by an infusion of Durham blood, are better than those that have not; and that, when hardened to exposure, they bear it better than the unimproved, is simply evidence of a fact which has become an axiom among stock-growers, that "blood will tell;" and I have never seen anything in your pages that did not recognize this truth, and allow that the short-horns were splendid examples of it. The fact, also, that a resident of England, who had never seen this state, advises Durhams in preference to Ayrshires or Devons, *for California*, when its climate and system of farming are so peculiar, would hardly seem a sufficient basis for a conclusion, on which should depend, not only one's own fortune, but, to some extent, the improvement of the (*bos*) race for future generations.

As my admiration for short-horns leads me to have them about me—so that I now own more Durhams than Devons—I can be accused of no partiality in offering the results of my experience and observation, even if they should seem to conflict with those of your correspondent. You will allow that I have been favorably situated for determining their relative and comparative value in certain situations, and the result has been that, on the low, moist lands of my Ohio farm, where rich, succulent food grows luxuriantly throughout the summer—being favored there with summer rains, and not having those discriminating markets, which, in England, give to Devon beef the highest value, to which its finer quality entitles it, and which, in our own Eastern metropolis, it is beginning to receive—I have sometimes been able to realize as large profits from the Durhams, as from the Devons, which were kept on the short grass of the higher grounds.

In California, the case is quite different; there are no summer rains, and but few localities where there are pastures so low, or facilities for irrigation so extensive and economical, as to enable us to provide the abundance of *succulent* food which is necessary to grow the Durham with *profit*. Most of the stock-growing regions are those hilly sections over which the light, agile limbs of the Devon are best calculated to carry him, and covered with the dry, nourishing food which is just suited to his requirements, and will make him, in this temperate, but stimulating climate, the most *profitable* beef that can be adopted. *A pound of beef is only a pound of beef*, whether in an animal that weighs one thousand or two. The Durham can be made to grow a larger carcass than the Devon; but it will be done at much greater expense per pound. The general opinion, among those who have given the subject the closest attention, is that the greatest profit results from smaller animals that do not have to carry an enormous carcass about with them while collecting the food that is to keep up its vitality.

In other qualities, the excellence of the North Devon is so well known, that it seems hardly necessary to refer to it; but, as it is on account of their superiority for



*all* purposes that we especially value them, we will entertain you for a moment with an extract from a recent publication, most valuable to the farmer—Copeland's "Country Life." He considers the different breeds carefully, and at length; coming last to the Devons. "These," he says, "are small cattle. The males are noted for their docility and enormous working powers, as well as for a decided aptitude to fatten, and for the superior quality of their beef. They do not ripen, or become fit to kill at so early an age as the Durhams; but they can be worked till four or five years old, and then put up to fatten. They *need work* to develop them, and if kept idle, will be invariably stunted in their growth; whilst the Durhams, or short-horns, are *impaired* for beef if worked.

"The milk of the Devon is very rich—instances being given where four quarts have made a pound of butter, and six quarts being sufficient to do this any time. It is very rich, too, after being skimmed; no length of standing will free it from all its cream, and the skim milk of the Devon is equal in richness to the new milk of other breeds. The quantity is reputed to be small, and this is generally set down against them; but there is a difference in the quantities given by different stocks of Devons: cows of some stocks have given, in America, three thousand, five hundred quarts in a year, and will constantly average sixteen hundred to eighteen hundred quarts. They never come in, with an immense bag, to dwindle down to nothing soon, but are constant and steady milkers till within a short time of calving; and two cows are mentioned in Colman's European Agriculture, of the North Devon breed—one of which gave nineteen and a half pounds of butter in a week, and more than three hundred and eighty pounds in a year; the other produced more than twenty pounds in a week. They are very hardy, both males and females, thriving on pastures where a Durham would starve; and the cows have not the tendency to milk diseases, so characteristic of the Alderney."

I have myself studied carefully to know what breed is best adapted to this country, and am satisfied that, with the grazing and herding system prevailing here, and the long, dry season, when cattle fitted for mountain ranging improve so wonderfully, there is no breed that compares with the Devon for all the purposes for which cattle are produced.

As a pure breed, they are the "*rubies*" of the race, and he who obtains them will show "*wisdom*." As an element in an improved stock of grade cattle, they possess more strength of blood, and force to infuse into their progeny those qualities for which they are so distinguished. Let every one, then, who looks to practical results, and desires to make the business of stock-raising profitable, keep up the breed in its purity, preserving on his place a few thorough-bred animals; then by management, breeding from common stock to half and three-fourths, seven-eighths, and so on, until in a few years, by means of a comparatively small outlay now, he may have a herd as numerous as Abraham's, which will all be as good as full bloods, unless for breeding, and for that he will have his thorough breds, which will have paid for themselves many times over, in the increase which will have been disposed of to aid others in pursuing the same course, by which they may arrive at the same happy results.

# Editor's Repository.

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THE CULTURIST AND OUR ASSOCIATE.—With the next, or July number, we enter upon the third year and volume of the CULTURIST. It has been intimated that our terms—five dollars a year—coupled with the offer to bind the back volume free of charge, to such as pay in advance for the succeeding year, is not placing our subscribers upon an equal footing, inasmuch as very many who take the CULTURIST, circulate it among those who, on reading it, become also subscribers. By giving it this kind of circulation, very many of the numbers are never recovered by the owner, which prevents his securing a bound volume without a repurchase of the missing numbers. We have determined, therefore, instead of offering to bind the back volume free of charge, for such as send us five dollars in advance for the succeeding volume, to reduce the price per year to four dollars, to all who pay us in advance, leaving it to those who may desire their back volume bound, to get it done at their own cost.

We now number among our contributors, some of the best practical agriculturists in the state—embracing stock, grain, fruit, wine and bee-culturists. With their assistance, we have secured a success as a journalist, thus far, of which we have every reason to be proud. Our efforts for the future will be unabated and increased to continue the CULTURIST, as an acceptable and desirable medium for the diffusion of agricultural, horticultural and mechanical knowledge, as well as a record of their progress upon the Pacific coast; and not only this, but we shall endeavor to improve the CULTURIST, as our increasing opportunities and means may permit. We say *our* increasing opportunities, for our patrons, we are sure, will be pleased to learn that we now have an associate, WILSON FLINT, co-editor and proprietor of the CULTURIST, whose ability as a writer, and experience as a practical horticulturist, is acknowledged throughout the state. We take a pleasure in introducing MR. FLINT to our numerous readers and patrons. w.

SALUTATORY.—In becoming associated with MR. WADSWORTH, who commenced the publication of this magazine, and has conducted it with eminent ability to the successful close of its second year, I feel that I assume high and responsible duties. In this age of progress, when art and science have conquered materialism, and given human understanding a dominancy over cause and effect, no feature is more prominent than the absolutism gained by the power of the press, which marks the foot-prints of the passing hour, and opens the pathway of succeeding ages. Hence, he who gives his opinions to the public, through the printer's art, stamps the reflex of his mind, for good or evil, upon the minds of those to whom he caters, as indelibly as do the types mark the record for posterity. If the editor's vocation is merely to comment upon the passing news of the times, or pass strictures upon political mutations, then the good or harm he does is insignificant; because his impress passes away with the smoke and dust which stimulated his action. But when his labor is applied to the purpose of teaching the economy of the industrial pursuits, then it is that he assumes a grave responsibility. An error of judgment on his part, a superficial investigation of important subjects, or a careless statement of facts, may be the means of misleading an individual,

or whole communities, so that capital, time and expectation, devoted to important enterprises, may result in partial or total failure.

In California, life projects are crowded into the limit of a few short years; the hurried incidents of this gold land having reduced business affairs to the directness, brevity and electric condensity, becoming noticeable in the construction of the languages of nations, where the magnetic telegraph is the medium of communication. Thus it is that we cannot afford to speculate upon theories of doubtful utility. We want facts and stark-staring usages of practicable application. Empiricism will be scouted, and the paramount object of this journal will be to make its original articles, or those obtained from other sources, reliable. It is the expectation that our co-editor, MR. WADSWORTH, will visit the Atlantic states during the autumn, so as to attend many of the state fairs, as well as the great exhibition of the United States' Agricultural Society. This will enable us to present to the readers of the CULTURIST much valuable information, as he will make note of everything applicable to California—most especially when visiting the Southern states, whose agriculture, on account of climate, is more nearly akin to that of our state. Thus, while one of the editors will be gleanings from the great and rapidly extending horticultural fields of our old Eastern homes, the other will remain to mark the progress of California, during the growing of our inflowing harvests, which give promise of being more than usually bountiful. Nor may it be inappropriate to state in this connection, that after the return of MR. WADSWORTH, it is my intention to visit the great wine districts of Europe—particularly the upper Douro of Portugal, where, by engaging in the practical labors of the vineyard during a whole season, I hope to obtain that entire familiarity with the habits of the vine, which will enable me to impart valuable information to our people, now deplorably ignorant of vine-culture. Hoping that my connection with the CULTURIST may be agreeable to all its patrons, and that our intercourse may be lasting and mutually advantageous, I subscribe myself the public's obedient servant,

WILSON FLINT.

**INDIVIDUAL RESPONSIBILITY.**—As no two persons always think alike upon the same subject, however well they may agree generally, it is determined that to the original matter furnished for the CULTURIST by its two editors, in future, each will append his own initial letter, that the responsibility of his opinions and the practices he advocates may rest where they properly should. This arrangement commences with the present number.

**FRONTISPIECE.**—In California, where coffee is actually grown as one of our horticultural products, we think we have a perfect right to talk about coffee-pots, and if we please, present an engraving of one. Not that we would cumber a single page of the CULTURIST with an engraving, or a description of any of the old-fogy style of coffee-pots; but, when we find, as in this instance, a California invention, possessing superior merit, and adapted to the wants, if not essential to the production of a real home luxury, we shall never hesitate to present it to our readers and patrons. The Golden Gate coffee-pot is a recent, California invention, possessing advantages over any other coffee-pot in use. It is really becoming one of the indispensable institutions of the household. In point of economy, a saving of its cost can be made by its use, over any other coffee-pot, in two months' time, even by a very small family. It is simple, easily managed, because self-regulating, and the extra, heavy material of which it is made is a guarantee of its durability. Its truly neat and tasteful appearance, and its elegant finish, renders it an agreeable appendage and an ornament to the kitchen. It is the invention of J. DE LA MONTANYA & BRO., and manufactured by them at 82 Jackson street, San Francisco. We can confidently recommend the Golden Gate coffee-pot to all lovers of good coffee. We advocate the use of home products and home manufactures; wine and coffee, wine-presses and coffee-pots.

W.

**OUR PRESENT SUBSCRIBERS.**—We shall continue to forward the CULTURIST to all of our subscribers, whose term of subscription expires with the present number, except two, who have peremptorily ordered it stopped: cause—our advocacy of a permanent location of the state fair at the cap-



ital of the state. We wish it distinctly understood that we hold no man responsible beyond the time for which he subscribed. As a special favor, however, we desire that our former patrons continue one and all with us; but if they will not, that they notify us of their intentions. It will be exceedingly gratifying and encouraging to us, if our present patrons, with as little delay as possible, forward to us by registered letter or otherwise, the amount of another year's subscription—four dollars. We are anxious to know as early as possible who are our steadfast patrons, and the friends of agricultural improvement throughout the state.

W.

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### Make Home Bright and Pleasant.

More than building showy mansion—

More than dress and fine array—

More than domes or lofty steeples—

More than station, power and sway,

Make your home both neat and tasteful,

Bright and pleasant, always fair,

Where each heart shall rest contented,

Grateful for each beauty there.

More than lofty, swelling titles—

More than fashion's luring glare—

More than mammon's gilded honors—

More than thought can well compare,

See that home is made attractive,

By surroundings pure and bright,

Trees arranged with taste and order,

Flowers with all their sweet delight.

Seek to make your home most lovely,

Let it be a smiling spot,

Where in sweet contentment resting,

Care and sorrow are forgot;

Where the flowers and trees are waving,

Birds will sing their sweetest songs,

Where the purest thoughts will linger,

Confidence and love belongs.

Make your home a little Eden,

Imitate her smiling bowers,

Let a neat and simple cottage

Stand among bright trees and flowers.

There, what fragrance and what brightness,

Will each blooming rose display!

Here, a simple, vine-clad arbor

Brightens through each summer day.

There each heart will rest contented,

Seldom wishing far to roam,

Or, if roaming, still will cherish

Mem'ries of that pleasant home;

Such a home makes men the better,

Pure and lasting its control—

Home with pure and bright surroundings,

Leaves its impress on the soul.—*Exchange.*

**ALAMEDA COUNTY SEMI-ANNUAL FAIR.**—We acknowledge receipt of premium list and tickets to the Alameda County Fair, and are gratified to hear that a very general interest is felt by our neighbors across the bay, in the coming exhibition. A premium fund of \$2,000 is offered on a schedule, embracing every department of industrial life, and the board of managers invite competition from exhibitors from all other counties, as well as Alameda. This being the season when all kinds of stock is in fine condition, there will doubtless be a display of blooded and grade animals never equalled in the state. Prominent, also, as a feature of the occasion, will be a trial of the merits of various reaping and mowing machines; this alone should attract a great number of farmers from all quarters of our great grain districts. Then gay, smiling, volatile Flora, decked in gaudiest vestments, and perfumed with the dew of spring will be there also. But if you have no disposition to look at the herds which "roam o'er a thousand hills," or hear the mower whet his scythe "where the milkmaid singeth blythe," perhaps you will be inspired with a little of the poetry of life, by mingling with the happy throngs, always congregated on such occasions; if not, we advise you to keep away from those long lines of tables that will be groaning (no that's not the word) laughing under their delicious burdens of ripe, melting strawberries, just ready to be immolated in hecatombs of cream, fresh from the country dairy.

The fair will open on the fifth of June and continue to the ninth, and close with a ball on the night of the eleventh. The intellectual exercises of the occasion will consist of an opening address by Mr. Myers, the president, followed by an agricultural oration from Gov. Weller, which we feel sure will be an entertaining and valuable production; as since his retracy from the executive chair, he has been hardening his palms with the practice of horticultural theories—thus fitting himself to become an authoritative teacher. It speaks volumes for the enterprise of the people of Alameda county, to give two great fairs in a year; and we trust the citizens of San Francisco will extend to the coming exhibition that material aid they so richly deserve. Our daily markets afford the evidence of our dependence upon the people over the bay for the necessities and luxuries that grace our tables. Let us go over during the fair and see where the things are produced. F.

**STATE AGRICULTURAL SOCIETY.**—We were highly gratified during a recent visit to several of the counties bordering upon the Sacramento river and its tributaries, in finding so many staunch agriculturists, fully alive to the importance of the approaching annual fair of the state society. There seems to be a very greatly increased desire and determination on the part of both grain and stock-growers, to make the next fair excel any former exhibition; whilst the products of the vineyard will greatly surpass all previous displays, both in the variety and excellence of its fresh fruits, wines and brandies, should the season prove as propitious as the average of previous years. All the efforts of a few of our cotemporaries, including the feeble attempts of the *California Farmer's* editor, to crush out of existence the state society, and upon its ruins to build up a new structure, or structures, have been rendered wholly abortive by the good sense of our late legislature. The petition which *was to have been* numerously signed by the agriculturists of the state, praying for the demolition of the state society, was a miserable failure, resulting in the defeat of every application in aid of district societies, which, but for this movement, would doubtless have received substantial aid. We regret that it should have resulted as it has to the district societies, as they are in every respect deserving the fostering aid of legislative favor, as useful auxiliaries of the state society, in localities where it would be highly injudicious to propose the holding of a state fair. As to the propriety of holding the state fair at Sacramento, and at that place continuously, we never entertained but one opinion: we always favored it, as the most accessible of any locality in the state, possessing sufficient hotel accommodation, and the people show an appreciation of the merits of such an association in advancing the great industrial interests of the state. W.

**SAN FRANCISCO BAY DISTRICT AGRICULTURAL SOCIETY.**—The acting members of this new agricultural society are making every effort to advance its interests; but we are satisfied that their exertions are not seconded as they should be, by the citizens of San Francisco, where it is proposed

to hold the first fair of the society. We think it was a great mistake in not designating Oakland, as the place for the fair, as more accessible to a large proportion of the people who will visit it than the city of San Francisco. However, if perseverance will accomplish anything, the fair, even though held in San Francisco will be a success, so far as relates to a fine exhibition of animals and vegetable products. It is proposed to offer liberal premiums upon articles of superior merit, withholding awards from any and all of inferior grade and quality. It is time that more care should be exercised on this point; the indiscriminate bestowal of premiums upon nearly every article exhibited, has done much to lower the standard of excellence we should aim to attain, in our progress towards perfection. We hope all interested in the progress of our state's agriculture, will become members of the Bay District Agricultural Society, and as soon as possible, pay in their membership fees—the only sinews of progress, at present available to the officers and directors of the society.

W.

SMITH'S POMOLOGICAL GARDENS, SACRAMENTO.—To any resident of California, it is quite needless that we should give even the locality of these beautiful and interesting grounds, they having already attained a world-wide celebrity. We know the proprietor holds in supreme contempt, the morbid disposition of some to flatter exuberantly, whilst speaking of his achievements in horticulture and floriculture; we would, therefore, only refer to them now, or to our recent visit there, that our readers may be interested in a few facts that we may present, touching the skillful management and consequent superior condition of the pomological department, rather than amused at the piling of fulsome praises upon the floral department, or unmeaning compliments upon the devoted head of the truly hospitable proprietor. All who visit the Messrs. Smith are courteously received; but in addition to this, we are always generously entertained, and not unfrequently instructed in matters that pertain to the advancement of the horticultural interests of the state.

Immediately connected with the floral department of this establishment, are the orchards and vineyards, in themselves a success, amounting to a guarantee of the practicability of their almost unlimited extension over large districts of the Sacramento valley, upon the same conditions that have made these orchards and vineyards what they are—both thrifty and productive. Of the conditions that have contributed to the success, we place as foremost, irrigation and a thorough surface cultivation; for with all the attempts to decry the advantages of a judicious irrigation by our contemporaries, the fact is here patent, that without it, the fruit gardens and grounds of this now unequalled establishment, would rank with others in the state, of equal extent, as only second or third rate. The original attempt, which was but an experiment, to cultivate fruits to perfection in this locality without irrigation, was but a partial success, and clearly demonstrates the necessity of irrigation upon similar soils and subsoils, wherever situated with like climates. That the peach trees, and to a very limited extent, the plum trees of this locality are affected by the disease known as the leaf curl, or curl leaf, is true, but so are the trees of many localities throughout the state, where irrigation is not practiced; so this is no argument against its adoption, as suggested by one of our correspondents. If the conclusions of an experienced horticulturist of Sacramento city be true, as regards the most effectual preventive of this annually increasing malady of peach trees, which consists in giving to the trees the utmost vigor of growth during the entire growing season, then possibly the effects of early irrigation, in seasons when the spring rains are less abundant than this year, may prove of service in checking the progress of the curl to some extent; but as yet, the proprietor of the pomological gardens of the American river, is as much at a loss for an effectual preventive of the curl leaf, as the most inexperienced novice.

Another fact besides that of the necessity of irrigation, as demonstrated by Mr. Smith, in the culture of his locality, is that of the certain success of wine, or vine-growing. It is not merely that the grape is produced here of a superior quality for the dessert—it is found to possess all the requisites of a superior wine. We speak from matter of fact in this regard, for we were not only shown the vineyard scientifically and skillfully grown, but its product, in varieties of wines of the last year's vintage, of a quality that will satisfy the most fastidious, that both soil and climate are admirably adapted to the production of fine wines. And yet another fact, that there is no great



mystery connected with the manufacture of even choice wines. All the vaunted mystery and secrecy attempted to be thrown around the management of the wine cellars of our metropolis, by those conducting them, are, by Mr. Smith, in his readiness to communicate any information connected with wine-making, made to vanish into mere charlatanry.

Mr. Smith has also demonstrated, by experiment, the fact that the Sacramento valley may yet be made one of the most favored raisin-producing countries of the earth. He has no difficulty in raising the grape, or producing the raisins in a superior marketable condition. Connected with the floral and pomological, or fruit-producing capabilities of the soil of the Sacramento valley, as demonstrated at the gardens of Mr. Smith, is that of seed-producing. For several years, better seeds of all the varieties of vegetables that grow and flourish in this latitude, have been here produced, than have been or can be imported: this *fact* is now among the indisputable ones. We have thus taken upon ourself the setting forth of facts connected with the enterprise of Mr. Smith, rather than any particular laudation of the courtesy or hospitality extended to us and ours, on our recent visit, believing it will possess more of interest to the general reader than anything we could have said of a different character.

W.

**LAUNDRY IMPROVEMENTS.**—Probably no department of labor so strongly presents the contrast between the usages of Chinese barbarity, as practiced by them in the mode of washing clothes, thousands of years since, and handed down from generation to generation without change to the present day, as a comparison with the operations of an American laundry. In order to see the Chinese mode in its primitive simplicity, one should go over the hills to Washerwoman's Bay, where rows of celestials may be seen ranged on the shore of the lake, each having a quantity of clothes in their hands, which they dip into tubs or the bay, and then swing over their heads, bringing the fabrics down on to benches in front, making fearful rents by the concussion in antiquated garments, as we have reason to know to our sorrow, in the '49 times of California life. Having seen this, take a stroll out Brannan street, near Third, and step into that large, new brick building, known as the Chelsea Laundry, and you will at once be struck with the change produced by civilization. In this establishment, owned by Alexander & Co., steam power does the work of washing, wringing and mangling, with a capacity to turn out ten thousand pieces per day. The soiled linen is first put in an immense cylinder, which alternately revolves ten times in opposite directions, at a slow gait, being self-adjusting and driven by a steam engine. This changing movement prevents the clothes from tangling up and tearing. The operation of wringing is performed by placing the clothes in a perpendicular cylinder, open at the top, which revolves with great velocity, causing centrifugal action on the clothes, forcing them against the sides of the cylinder with such a pressure as to squeeze out the water, which passes out through the bottom of the machine. When going through this great establishment, we were forcibly reminded of the obligations poor humanity is daily under to these enterprising gentlemen—as they not only relieve housewifery of its severest drudgery, but grant to loafers the insignia of respectability.

F.

**PREMIUMS.**—We had thought of offering premiums to those who would interest themselves in procuring us subscribers for the third volume of the *CULTURIST*, which commences July first; but having determined to reduce the price of the *CULTURIST* to four dollars per annum, we shall, for the present, defer our plan of offering special premiums to a future day.

**ITALIAN RYE GRASS.**—Several inquiries have reached us relative to this grass, and where its seed can be procured. We have had no experience with this grass in California, and but a limited one in the Atlantic states. It is our opinion, however, that in all rich soils, where an abundant irrigation can be at all times secured, it would be a valuable acquisition to our now limited varieties of introduced grasses. Charles L. Flint, in his work on "Milch Cows and Dairy Farming," says of Italian rye grass: "It has been cultivated to considerable extent in this country—the Atlantic states—but with less satisfactory results than are obtained from it in Europe, where it endures all

climates, giving better crops, both in quality and quantity, than the perennial rye grass. It is one of the greatest gluttons of all grasses, and luxuriates in frequent irrigation with liquid manure, though it is said to stand the drought very well. The soils best adapted to it are rich, moist and fertile, of medium tenacity; and it is admirably adapted to the purposes of soiling, as it endures repeated cutting, rapidly sending up luxuriant crops. For rich soils near the barn, used for the growth of crops for soiling, it may be used as a profitable addition to our list of cultivated grasses." The true Italian rye grass seed can be procured of the seedsmen of this city, who advertise in the CULTURIST.

W.

VEGETATION IN CEYLON.—European fruits transplanted into this climate grow freely, but become evergreens, and for want of their winter repose cannot bring their produce to perfection. This difficulty has been overcome with vines, by laying their roots bare at certain seasons, and exposing them to the strongest heat of the sun. This process arrests the circulation of the sap, by which an artificial repose is created, and two crops of grapes are yielded in the year. Indigenous vegetation, scarcely susceptible of improvement by scientific culture, is loaded with the most exquisite fruits; cocoa-palm trees line the roads and encircle country dwellings in the southern provinces; extensive plantations of the Palmyra palm furnish the native population of the northern districts with a fourth part of their food; oranges, limes, figs, plantains and pine-apples, with the delicate mangos-teen and rich rambutan, flourish in abundance, and if eaten as soon as gathered, have a refreshing coolness; the rice grounds produce two harvests in the year; the cinnamon gardens, from which the Dutch drew such large returns, have been neglected since the monopoly was thrown open, but an inferior spice, sold at a lower rate, is more largely grown; and wild forest tracts have been cleared to make room for coffee bushes, which afford a new and increasing field of industry.—*Sir E. Tennent.*

THE LATE RAINS.—We speak of them as occurring on the 22d, 23d and 24th of May, and at this, our time of writing, the 25th, giving fair promise of continuance. It is not unusual that we have rain in May; but it is unusual to see it pouring down so bountifully as now. What the effect will be upon the interests of the farmer and horticulturist is not entirely certain. Uncut grass intended for hay will be generally bettered, or greatly increased in quantity; whilst its effect upon the grain crop, may not be as favorable, on account of the increased bulk of straw, and much of it, we fear, too soft and immature to stand up till the season of harvesting. Fruits will doubtless be increased in size, whilst the time of ripening, especially with the early varieties, will be somewhat prolonged. In noting the occurrence of the rain at this time, our object is more to make record of the fact, than to speculate upon its effects.

W.

ADVERTISEMENTS.—Our new advertisements are deserving of notice. You who would enjoy some of the *sweets* of life, can learn where good, strong, healthy swarms of bees can be obtained; and the horticulturist, where he can consign his fruits, and rely upon their being sold at the highest market prices. In fact, our advertising pages are admitted to be an interesting feature of our journal, which our readers would not like to dispense with, they being wholly an addendum to our regular forty-eight pages of reading matter monthly.

CANE CRUSHERS.—We have noticed several crushers, of various patterns and sizes, in this city. We have never inquired their cost. This is all the information we can at present give you, Mr. L. L.—s. To our subscribers and patrons we intend to be ever courteous, answering their letters of inquiry promptly, whether they inclose a postage stamp for return letter or not. But to those who are not our subscribers, and address us upon matters of interest only to themselves, without inclosing a postage stamp, our answer must and will invariably be brief.

WHAT A FALL!—Strawberries are coming in abundantly, and from the April price of one dollar a pound, have fallen to fifteen cents a pound, at which price they are to-day—May 24th—hawked about the city. There will doubtless be an abundant crop, and their season of ripening considerably retarded by the late and present rains, and not a little increased in weight (of sand) from the same cause.

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CALIFORNIA AGAINST THE WORLD.—The climate of California—for we can attribute it to nothing else—works wonders with the animal organization. Mr. D. Hoag, of Mayfield, Santa Clara county, has a venerable cow of the age of thirteen months: nothing remarkable in this, only that, at that age, she is but two feet, nine inches in height, and is now suckling her own first calf, a very pretty little specimen, and healthy.

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BOUND VOLUMES.—Should there be any one who has paid us for volume one of the CULTURIST, and not yet received it, by notifying us of the fact, when and how we were paid, it shall be sent forward without great delay. Our first volume is completely exhausted; but we are buying in a few copies wherever they can be obtained, to meet the demands of those who have just claims upon us.

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W.

GOOSEBERRY WINE.—S. N. inquires whether the native gooseberry will make a fair wine: we reply, it will. The berries need not be fully ripe; express the juice, add an equal quantity of water, and three pounds of sugar to each gallon of the mixture, and ferment it in casks, giving the necessary vent.

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THE "SCIENTIFIC PRESS."—We have received the first number of this new hebdomadal, just published by Geo. H. Winslow & Co., of San Francisco, and edited by an association of gentlemen of acknowledged philosophical and scientific acquirements. It will be mainly devoted to the culture of science, art, manufactures, chemistry and inventions. The first number presents a very neat typographical appearance, illustrated with engravings, and contains matter of interest upon the subjects of which it treats. We commend the *Scientific Press* to the favorable attention of the readers and patrons of the CULTURIST. Terms, four dollars per annum. In courtesy to its editors, we append their salutatory.

"Satisfied that our humble exertions will be amply rewarded, we appear to-day the advocate of a cause which this state has long required. We have abundance of material, which, if possible, we will endeavor to use to the best advantage, and point out the feasibility of its application. We shall devote our whole endeavor to the advancement and protection of our home manufactures, and aid the willing mechanic in obtaining an honest employment. Our prospectus states most particularly what we shall advocate, and we ask your perusal thereof. [Too lengthy for insertion this month.—ED. CUL.]

"Our undertaking is necessarily attended with much labor and an enormous expense. It is hoped that those interested in the welfare of our cause will lend us a helping hand.

"We desire that all persons who may be gifted with scientific knowledge, will make the *Scientific Press* their organ.

"With this short introductory "we launch our boat upon the waters.'"

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LARGE STRAWBERRY.—We saw at Alameda, a British Queen strawberry, raised by Dr. Haile, which measured nine and a half inches in circumference. Can any one beat it? The strawberry crop promises to be unusually large, as many new fields have been planted, and the old vines give evidence of great fruitfulness, owing to the timely and abundant rains. Of all the varieties tried, the British Queen seems to be the best for the damp, cool atmosphere of Oakland and Alameda, to which places strawberry culture is mainly confined.



## METEOROLOGICAL TABLE,

For Sacramento, California; being an abstract of Observations made during the month ending April 30th, 1860; Lat. 38°, 34', 41'', N.; Long. 121°, 27', 44'', W. Height of the lower surface of the mercury, 41 feet above the sea at San Francisco. The observations are made three times a day conformably with the hours adopted by the Smithsonian Institution. The indications of the barometer are given corrected for capillary action, and reduced to the temperature of 32° Fahrenheit, but not corrected for its height above the sea level. The rainy days are included under the head of cloudy and foggy, and are also put separately to show the number of days on which rain fell during the month. The force of the wind is estimated and registered in figures from 0 calm to 10 a hurricane.

By THOS. M. LOGAN, M. D.

| APRIL, 1860.                          | 7h. A. M. | 2h. P. M. | 9h. P. M. | MONTH.         | AVERAGE OF EIGHT YRS. |
|---------------------------------------|-----------|-----------|-----------|----------------|-----------------------|
| Barometer, Maxima .....               | 30.331    | 30.317    | 30.315    | 30.331 inches. | + 0.029 inch.         |
| “ Minima .....                        | 29.804    | 29.793    | 29.728    | 29.728 “       | — 0.011 “             |
| “ Mean .....                          | 30.032    | 30.018    | 30.002    | 30.017 “       | + 0.001 “             |
| Thermometer, Maxima .....             | 64.00     | 77.00     | 69.00     | 77.00 deg.     | — 0.50 deg.           |
| “ Minima .....                        | 44.00     | 51.00     | 50.00     | 44.00 “        | — 0.50 “              |
| “ Mean .....                          | 53.67     | 62.13     | 57.67     | 57.82 “        | — 0.72 “              |
| Force of Vapor, Maxima .....          | .413      | .519      | .509      | .519 inches.   | + .011 inch.          |
| “ “ Minima .....                      | .228      | .206      | .257      | .206 “         | + .038 “              |
| “ “ Mean .....                        | .319      | .350      | .357      | .342 “         | + .006 “              |
| Relative Humidity, Maxima .....       | 93.00     | 88.00     | 86.00     | 93.00 per ct.  | + 2.02 p. ct.         |
| “ “ Minima .....                      | 47.00     | 28.00     | 66.00     | 28.00 “        | — 16.15 “             |
| “ “ Mean .....                        | 77.27     | 64.37     | 74.27     | 71.97 “        | — 1.30 “              |
| Number of Clear Days .....            | 10        | 9         | 18        | 12 1-3 days.   | — 2-3 days.           |
| Number of Cloudy and Foggy Days ..... | 20        | 21        | 12        | 17 2-3 “       | + 2-3 “               |
| Number of Rainy Days .....            | .....     | .....     | .....     | 8 “            | + 2 1-3 “             |
| Quantity of Clouds .....              | 3.5       | 2.9       | 2.0       | 2.8            | — 0.5                 |
| Quantity of Rain and Fog .....        | .....     | .....     | .....     | 2.874 .....    | + 1.034 inch.         |
| 1st Days and 2d, Force of N. Wind..   | 8 2.3     | 8 2.1     | 7 0.6     | 7 2-3 1.7      | + 2 1-3 — 0.3         |
| “ “ N. E. Wind..                      | 5 1.6     | 0 0.0     | 1 2.0     | 2 1.2          | + 1-3 — 0.1           |
| “ “ E. Wind....                       | 0 0.0     | 0 0.0     | 0 0.0     | 0 0.0          | — 2-3 — 1.1           |
| “ “ S. E. Wind....                    | 9 2.2     | 5 2.2     | 2 3.0     | 5 1-3 2.5      | + 1 + 0.2             |
| “ “ S. Wind....                       | 6 2.3     | 4 2.2     | 5 2.4     | 5 2.3          | — 2-3 — 0.3           |
| “ “ S. W. Wind..                      | 2 3.0     | 5 2.4     | 6 1.7     | 4 1-3 2.4      | — 2-3 — 0.2           |
| “ “ W. Wind....                       | 0 0.0     | 2 3.5     | 4 2.2     | 2 1.9          | — 1-3 0.0             |
| “ “ N. W. Wind..                      | 0 0.0     | 6 2.8     | 5 1.4     | 3 2-3 1.4      | — 1 — 0.2             |

## Thermometrograph.

|                                          | DEG.  |                                                 | DEG.  |
|------------------------------------------|-------|-------------------------------------------------|-------|
| Highest Reading by day on the 25th ..... | 78.00 | Mean of all Highest Readings by day .....       | 63.27 |
| Lowest Reading by night on the 7th ..... | 38.00 | Mean of all lowest readings by night .....      | 47.60 |
| Range of Temperature during month .....  | 40.00 | Mean daily range of Temperature during mo. .... | 15.67 |

REMARKS.—In addition to the very opportune rains of March, commented on in our previous remarks, we have received a further contribution during April, swelling the aggregate of the season to 3.890 inches above the average of the preceding six seasons, and enabling us to calculate upon a most abundant grain and hay crop—providing the rains do not prove too cold or too frequent. At the present time (first May) we hear of the prosperous condition of every species of agriculture in all quarters of the state; and the orchards in the Sacramento valley are giving promise of fruitfulness that perhaps will never be surpassed. As the rainy season is not yet over, it is probable that the present excess of rain will be still further increased. Last year there fell 1.037 inches in May, and the average amount of rain for the month of May is 0.841 inches. There is but one single year (1857) of our recorded series, in which no measurable quantity fell during that month; so that we may reasonably expect that the total of the season will sum up considerably above twenty inches. It will be observed that the temperature has been below the average; white frost was seen in the city as late as the tenth instant, but has not materially injured the fruit thus far.















